

Fig. 1B.

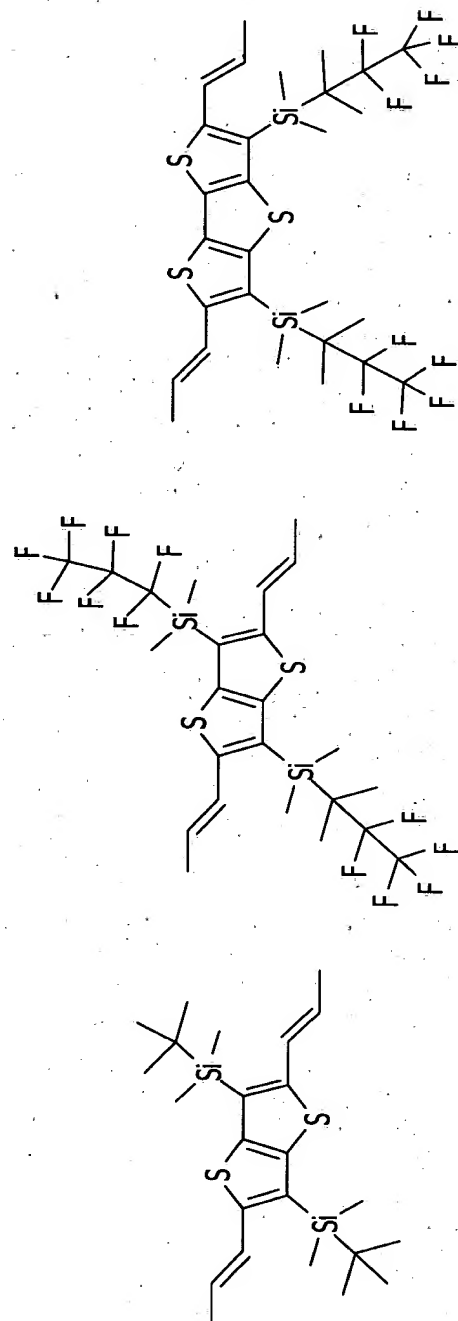


Fig. 1C.

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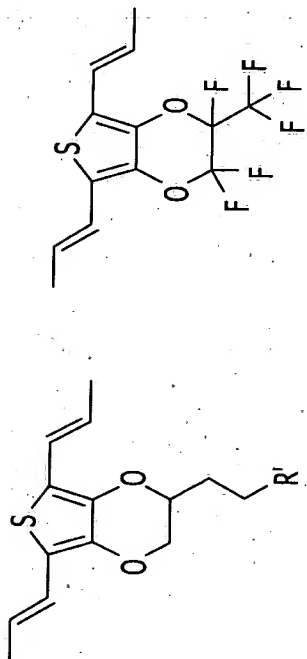
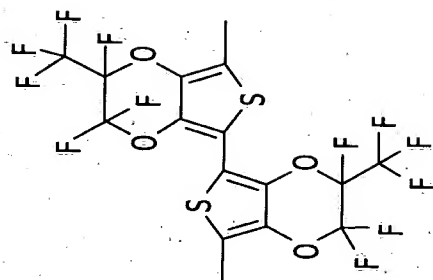


Fig. 1D.

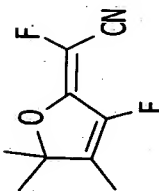
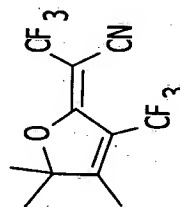
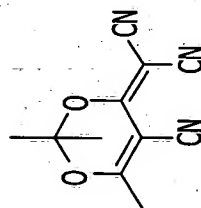
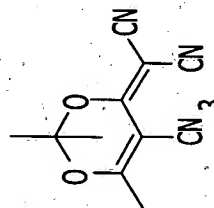
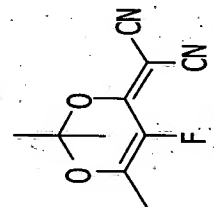


Fig. 1E.

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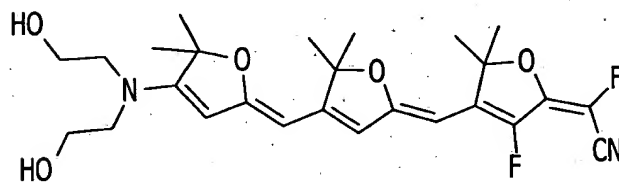


Fig. 2A.

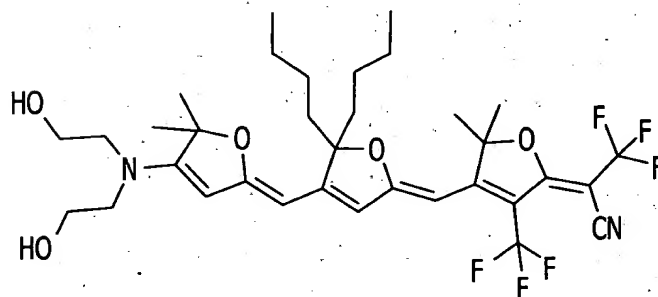


Fig. 2B.

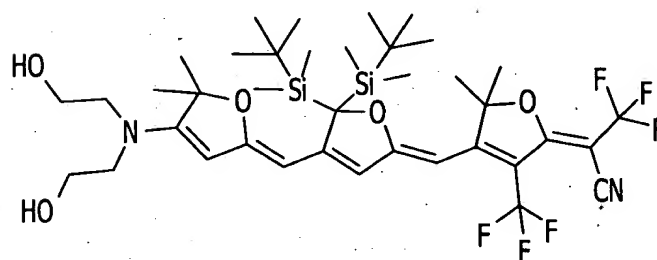


Fig. 2C.

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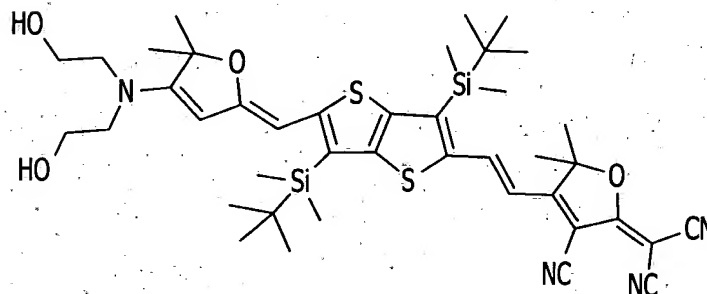


Fig. 2D.

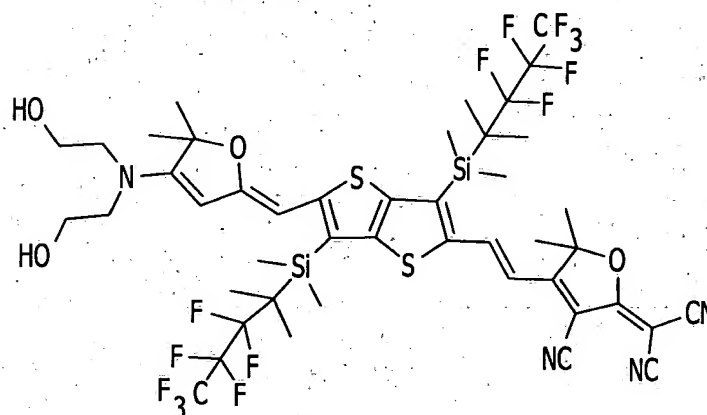
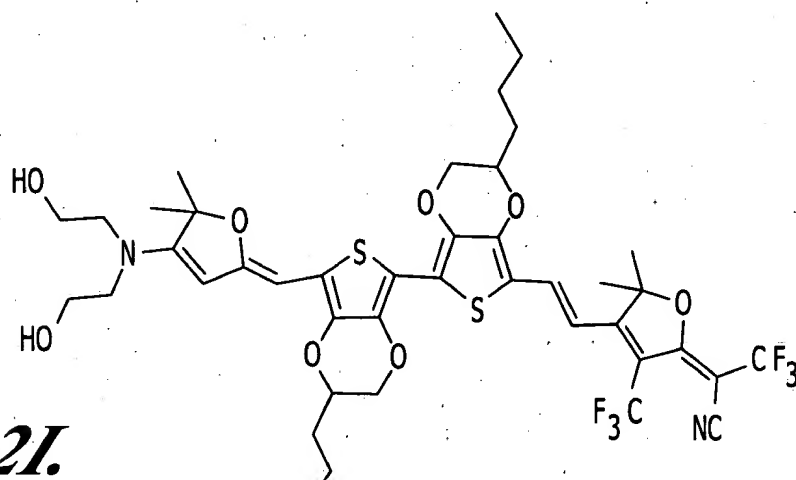
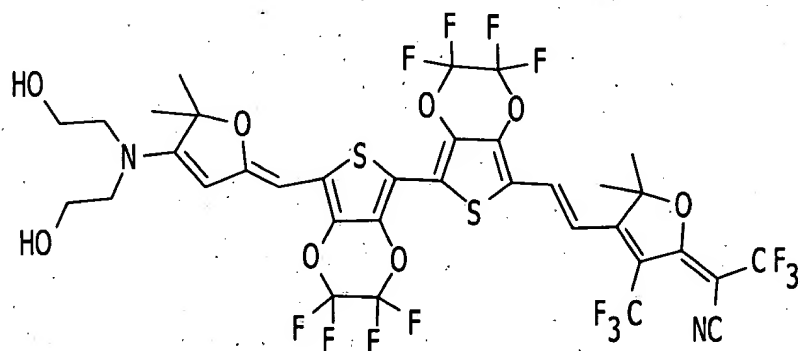
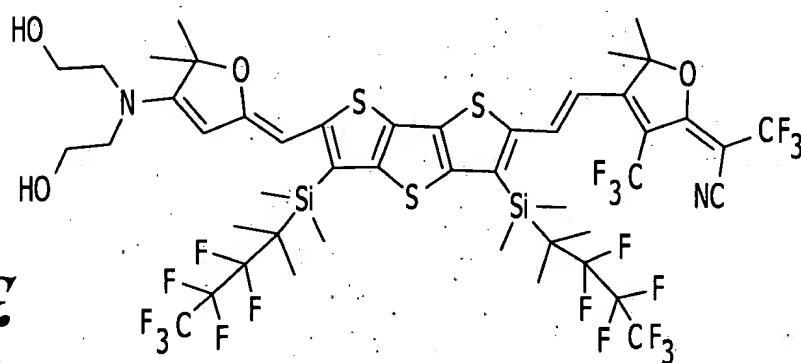
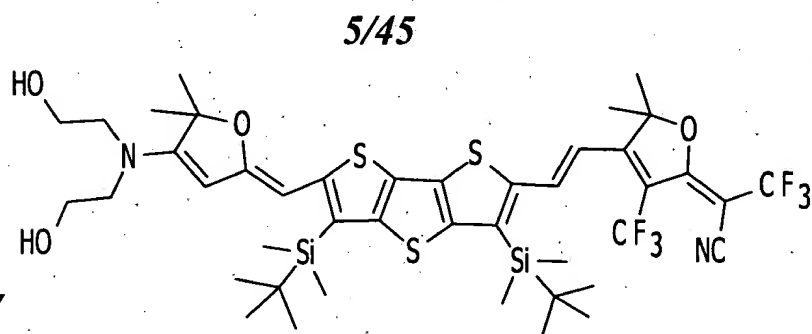


Fig. 2E.

2050800 "44421660



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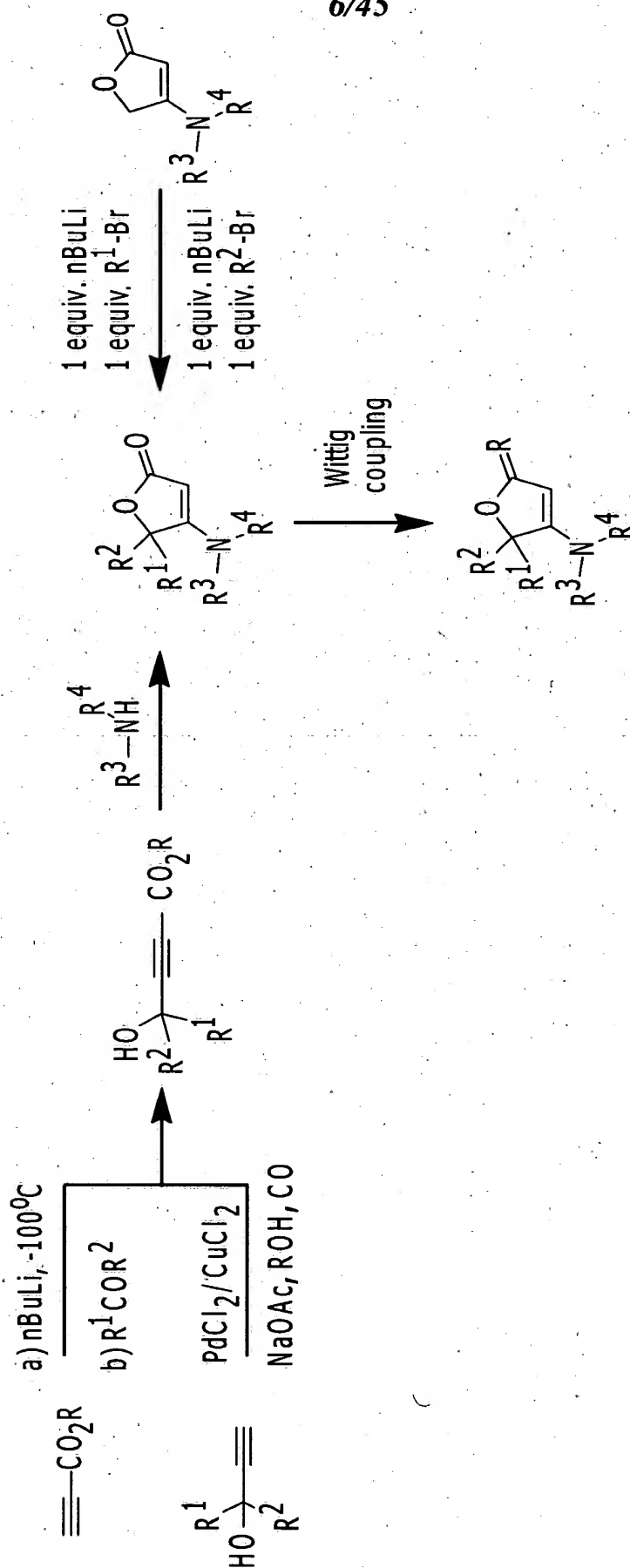


Fig.3.

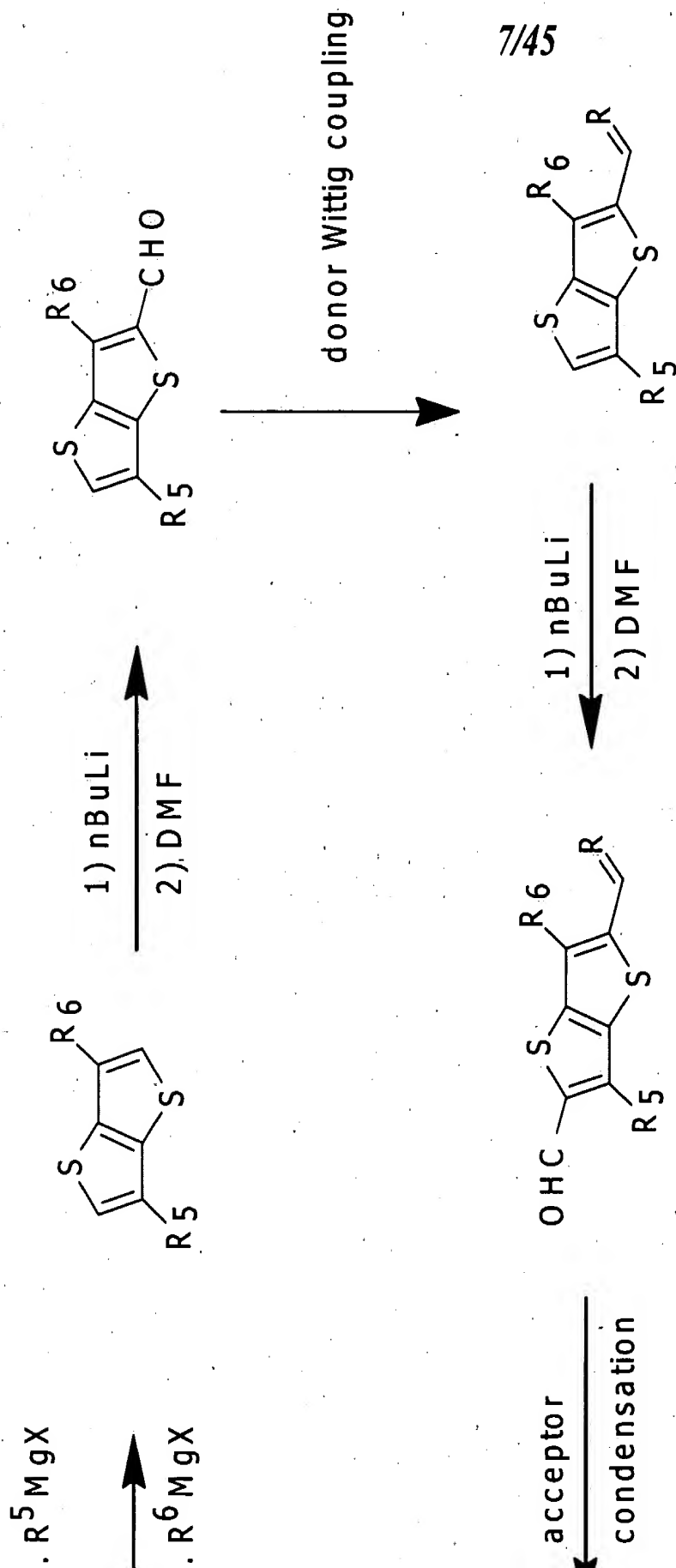
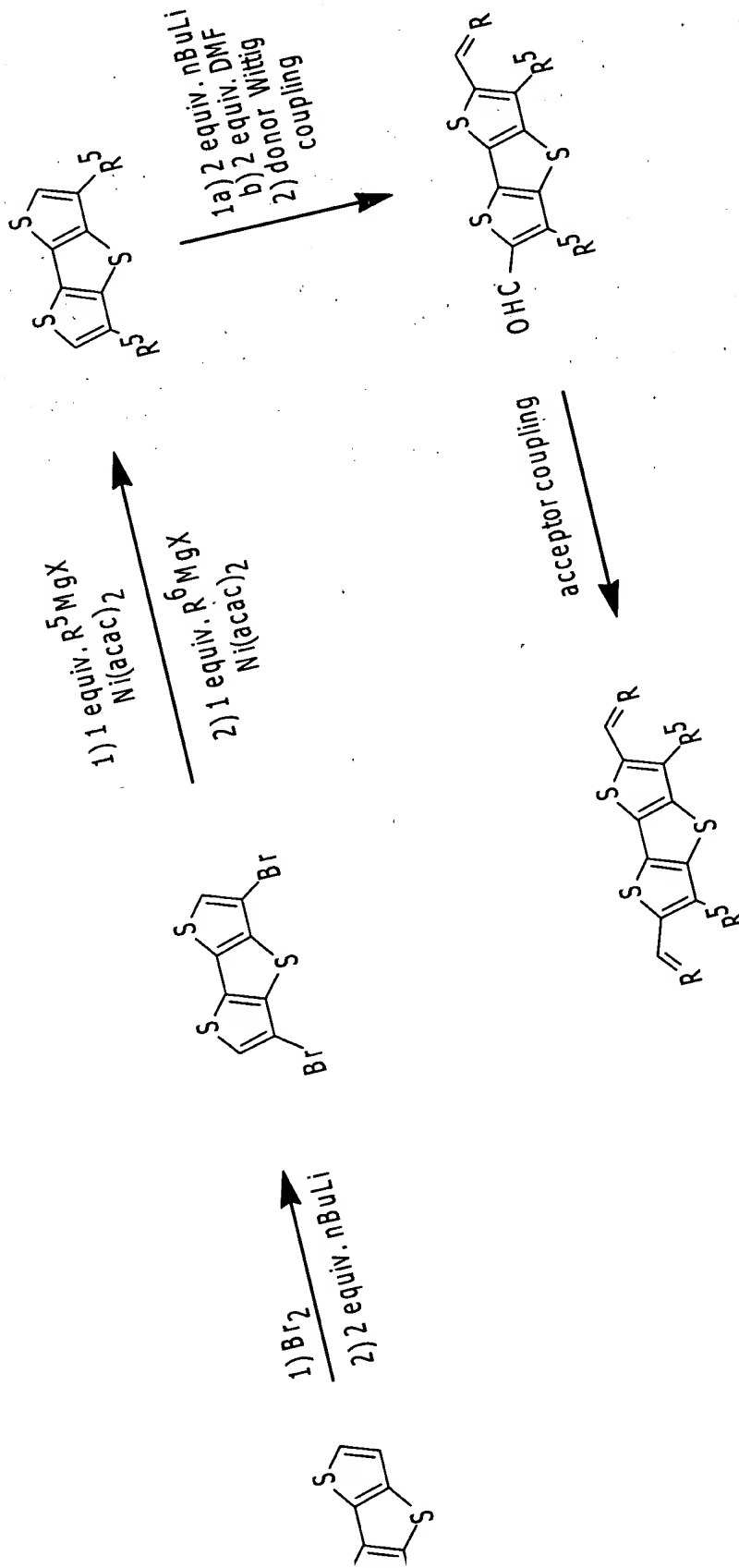


Fig. 4.

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2050E0 "H112T660"



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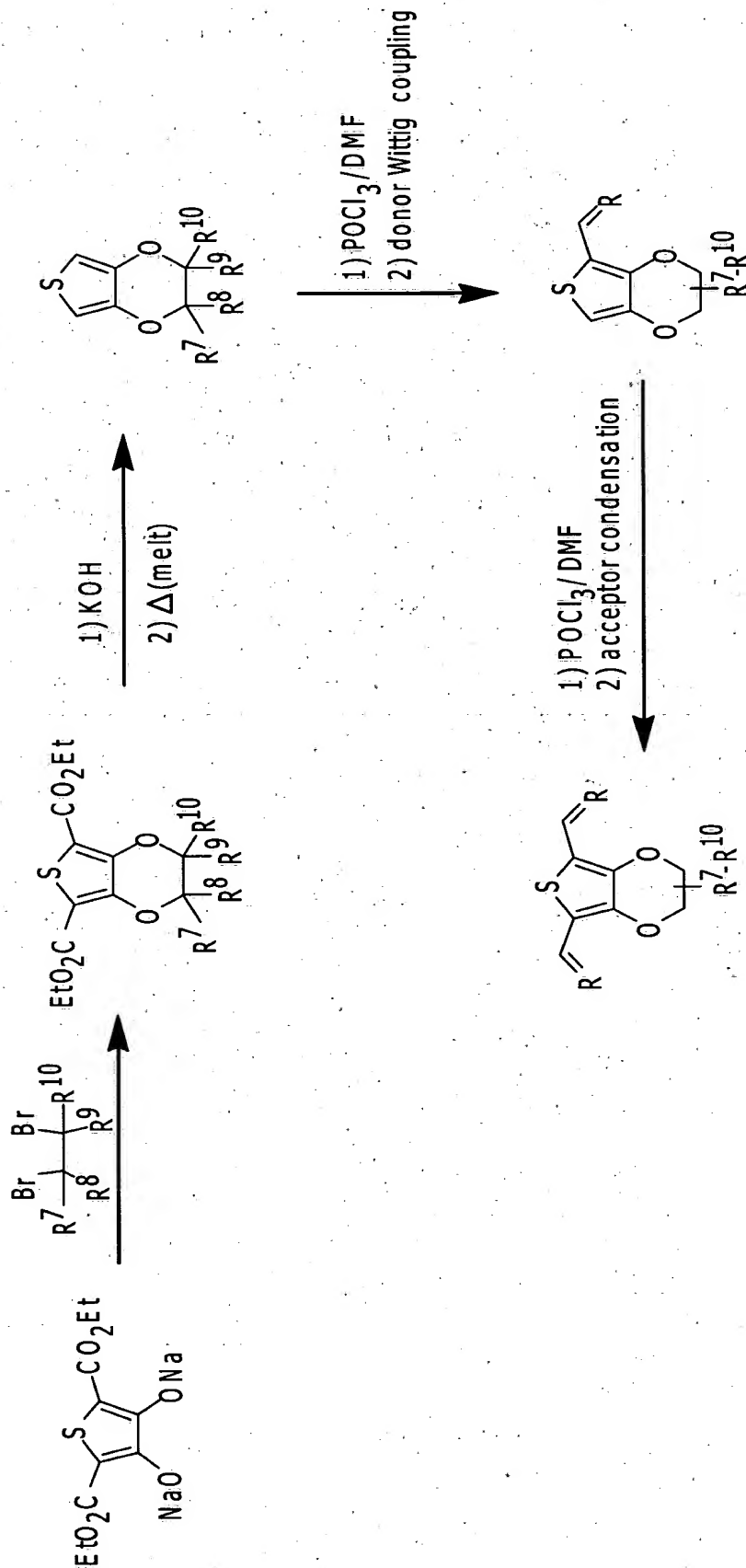


Fig. 6.

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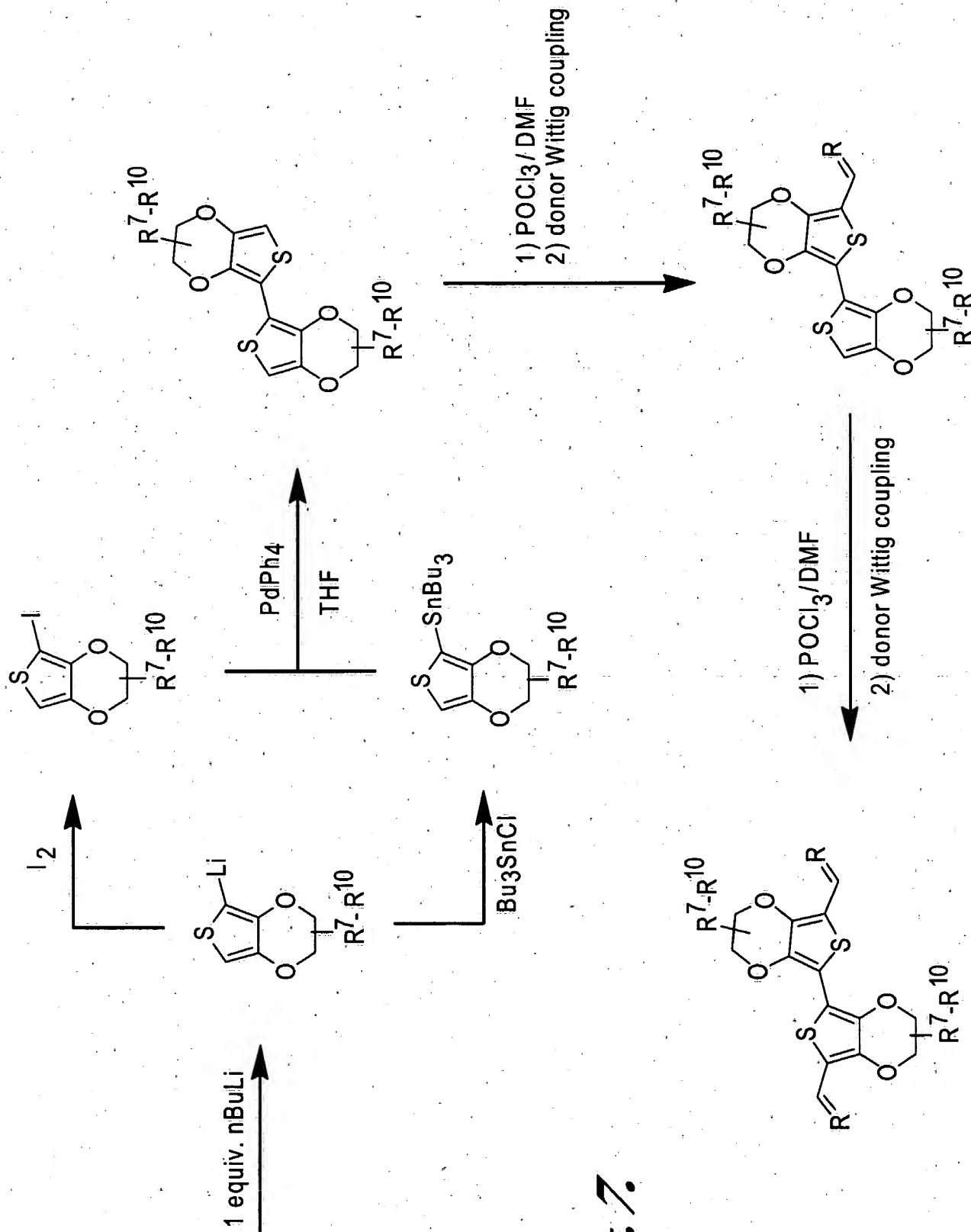
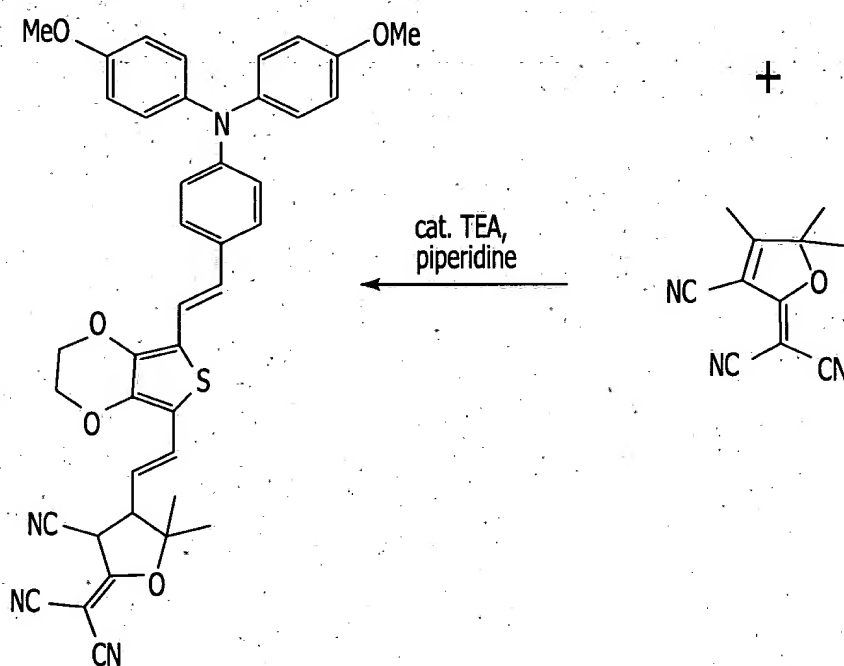
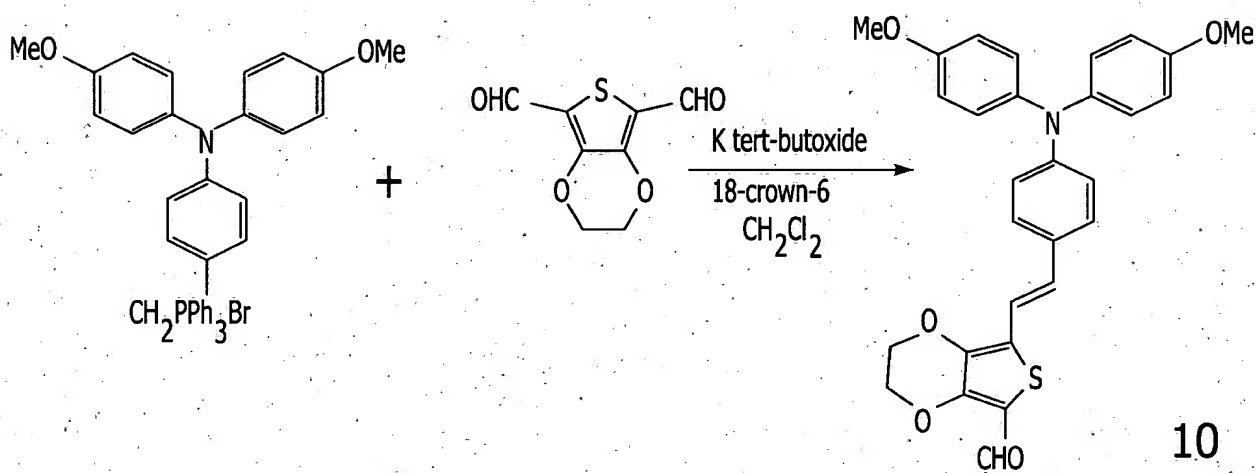


Fig. 7.

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*Fig. 8.*

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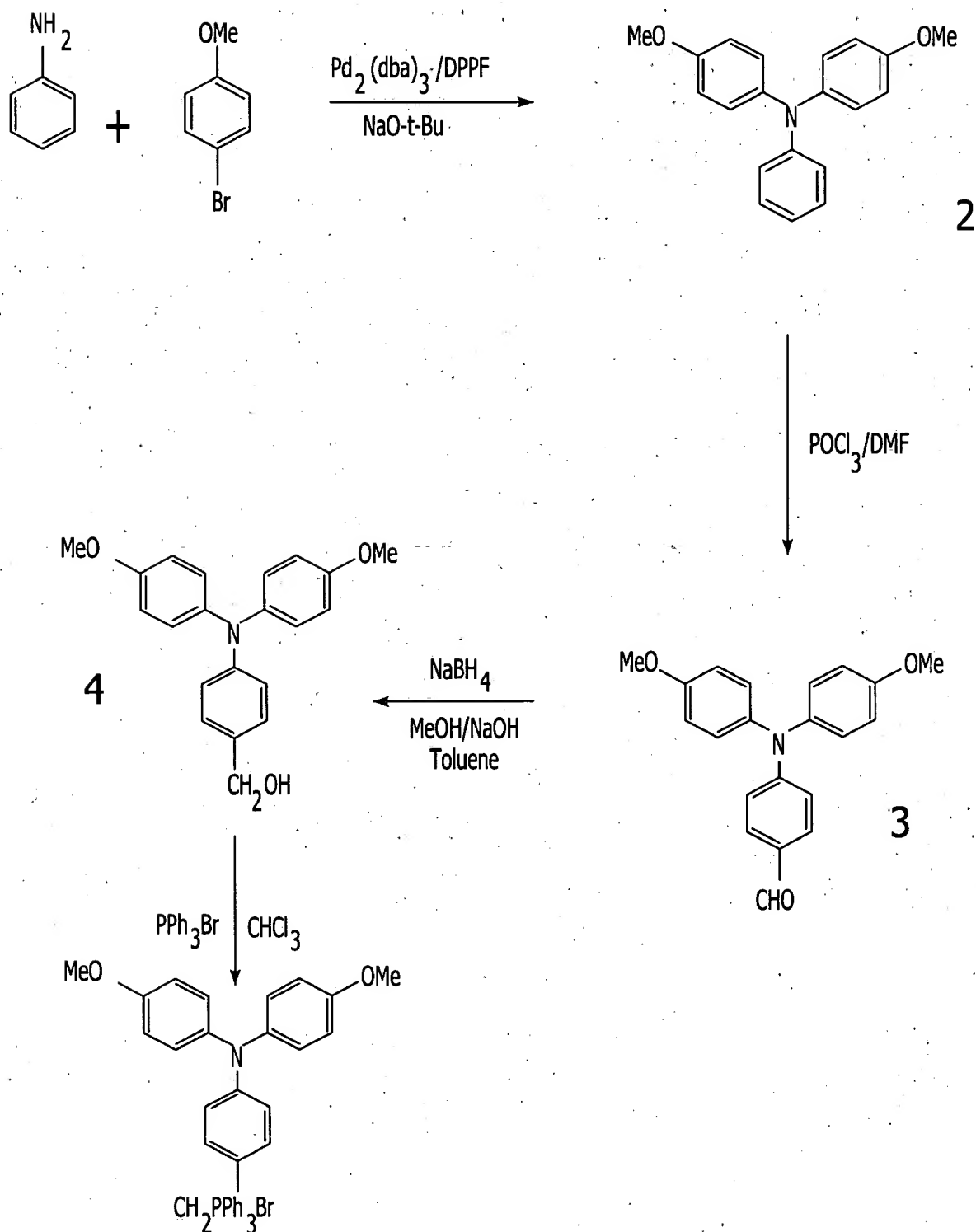


Fig. 9.

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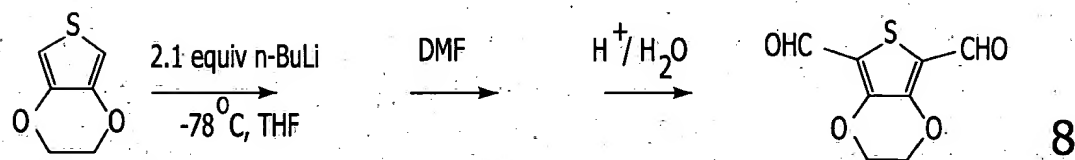


Fig. 10.

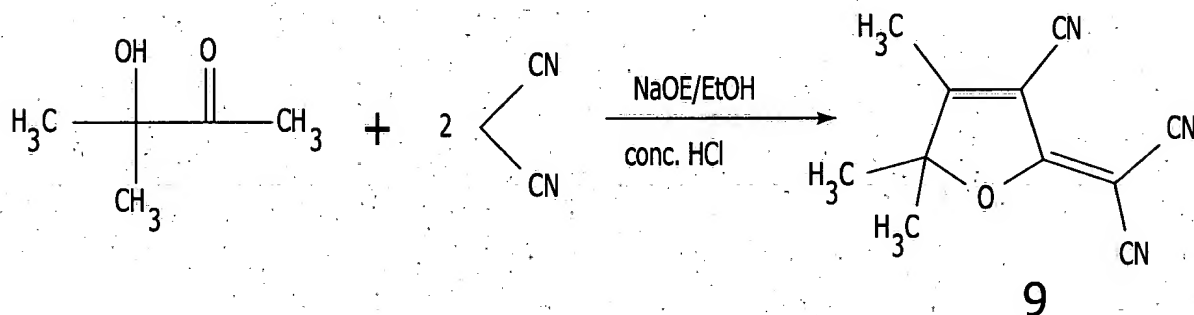


Fig. 11.

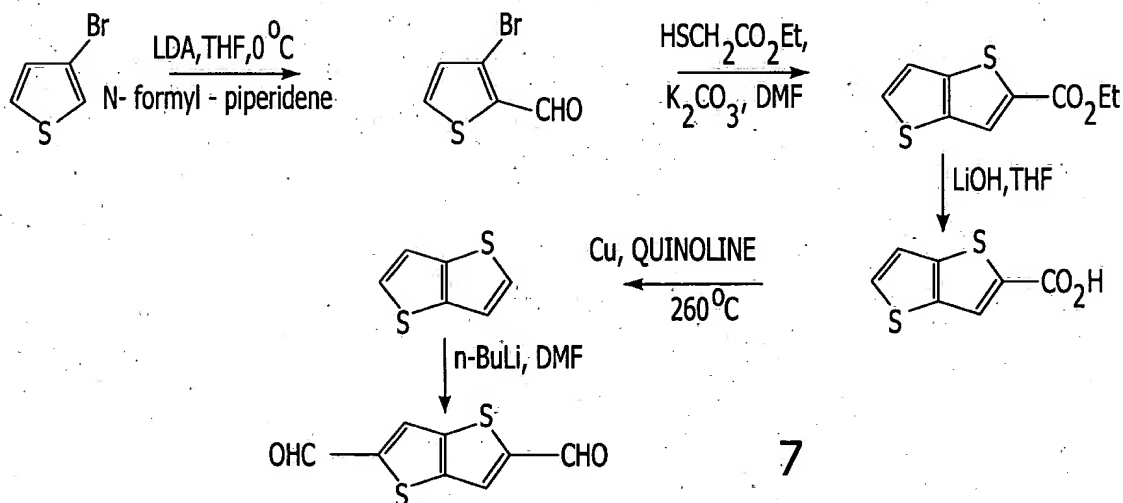


Fig. 13.

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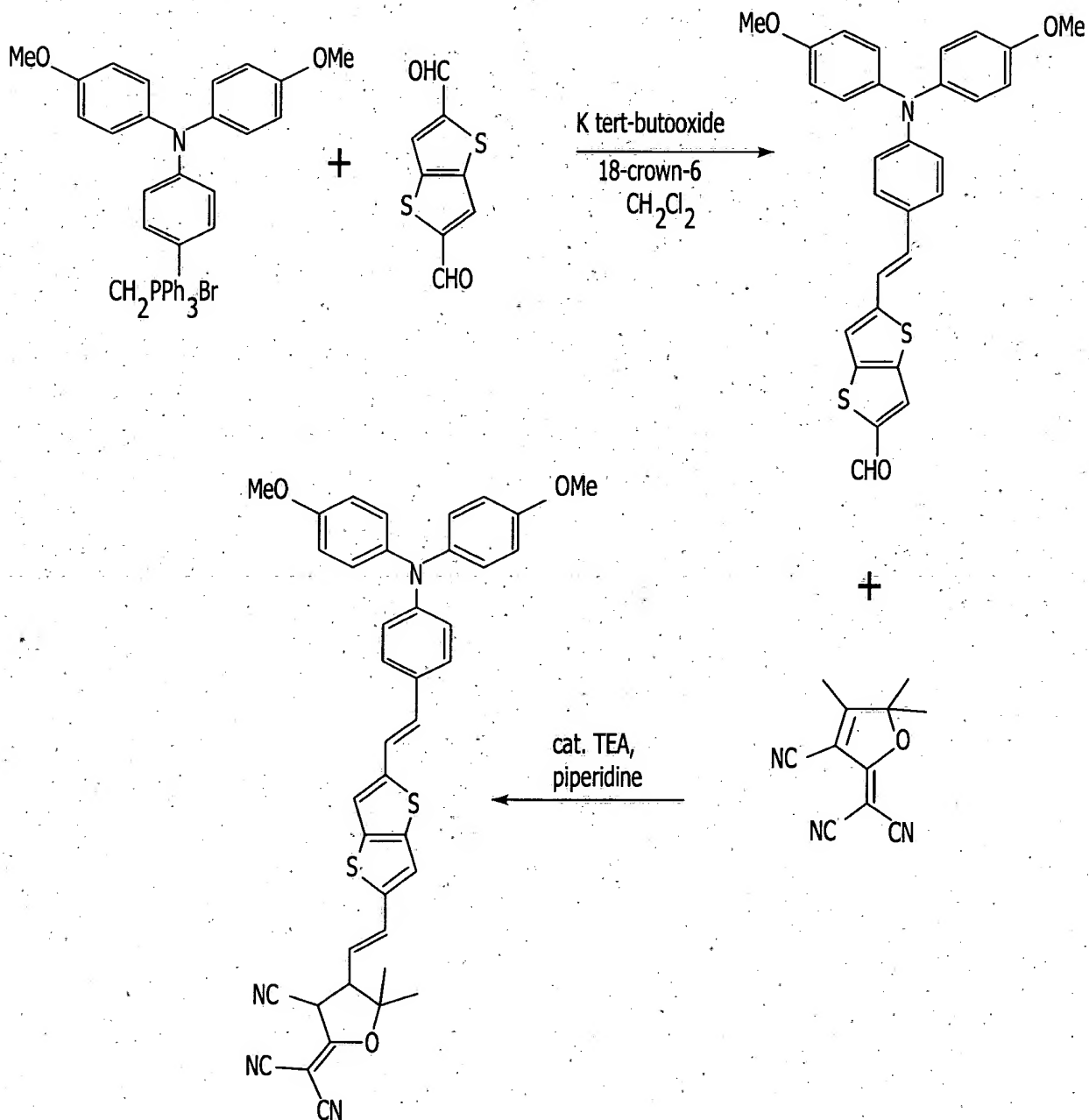


Fig.12.

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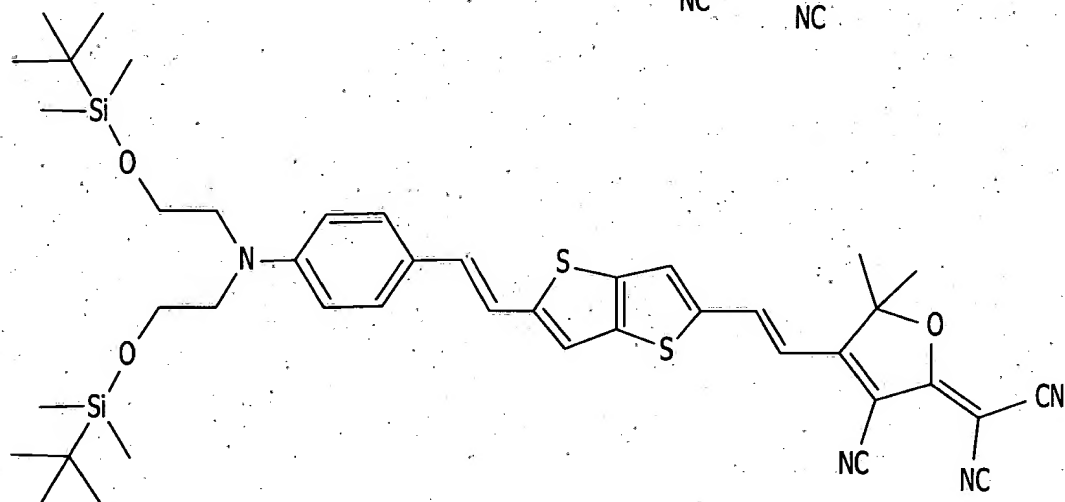
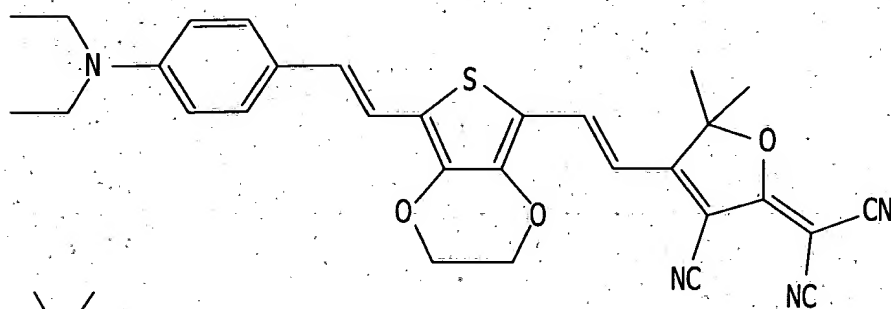
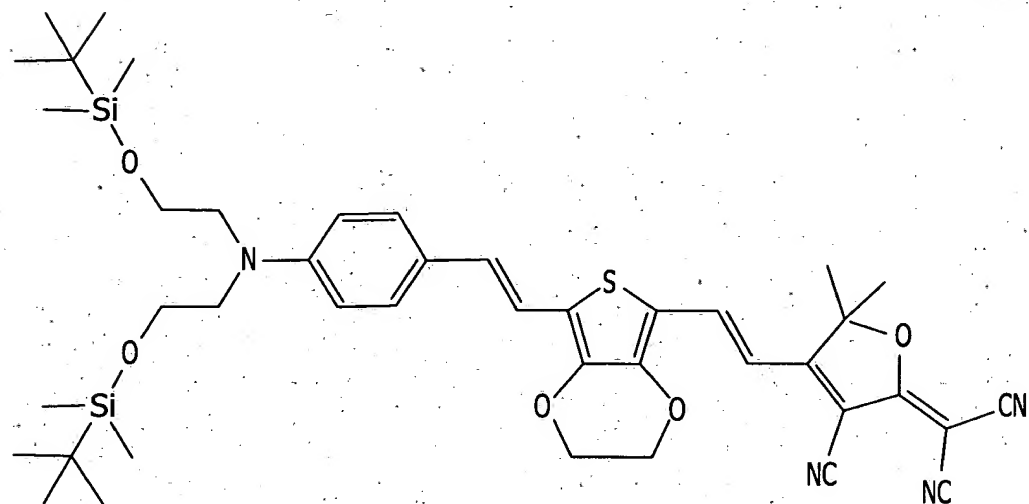
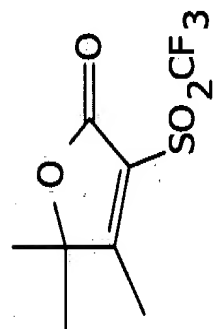


Fig. 14.



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KOH/H₂O/Benzene

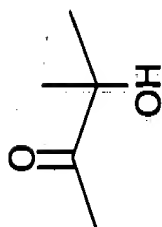


Fig. 16.

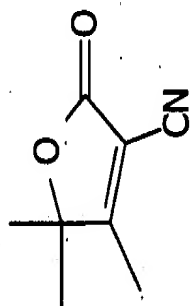
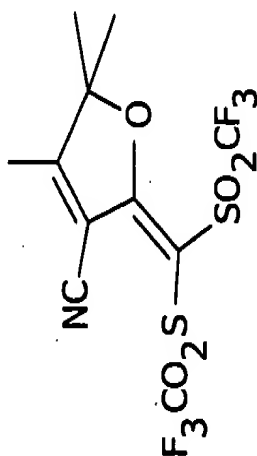


Fig. 19.

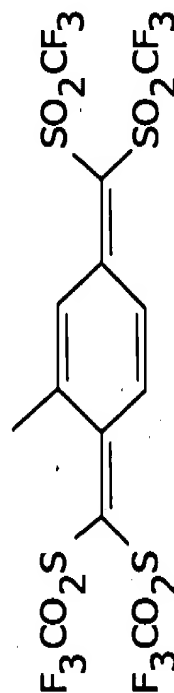


Fig. 20.

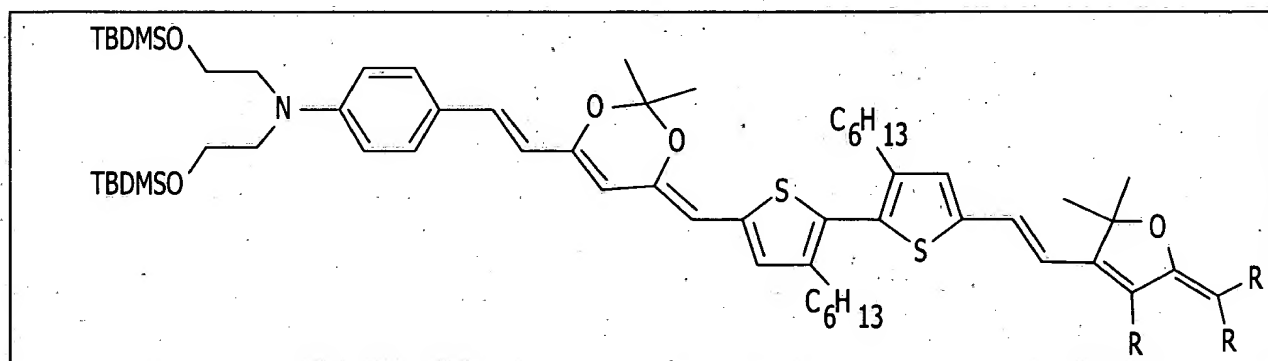
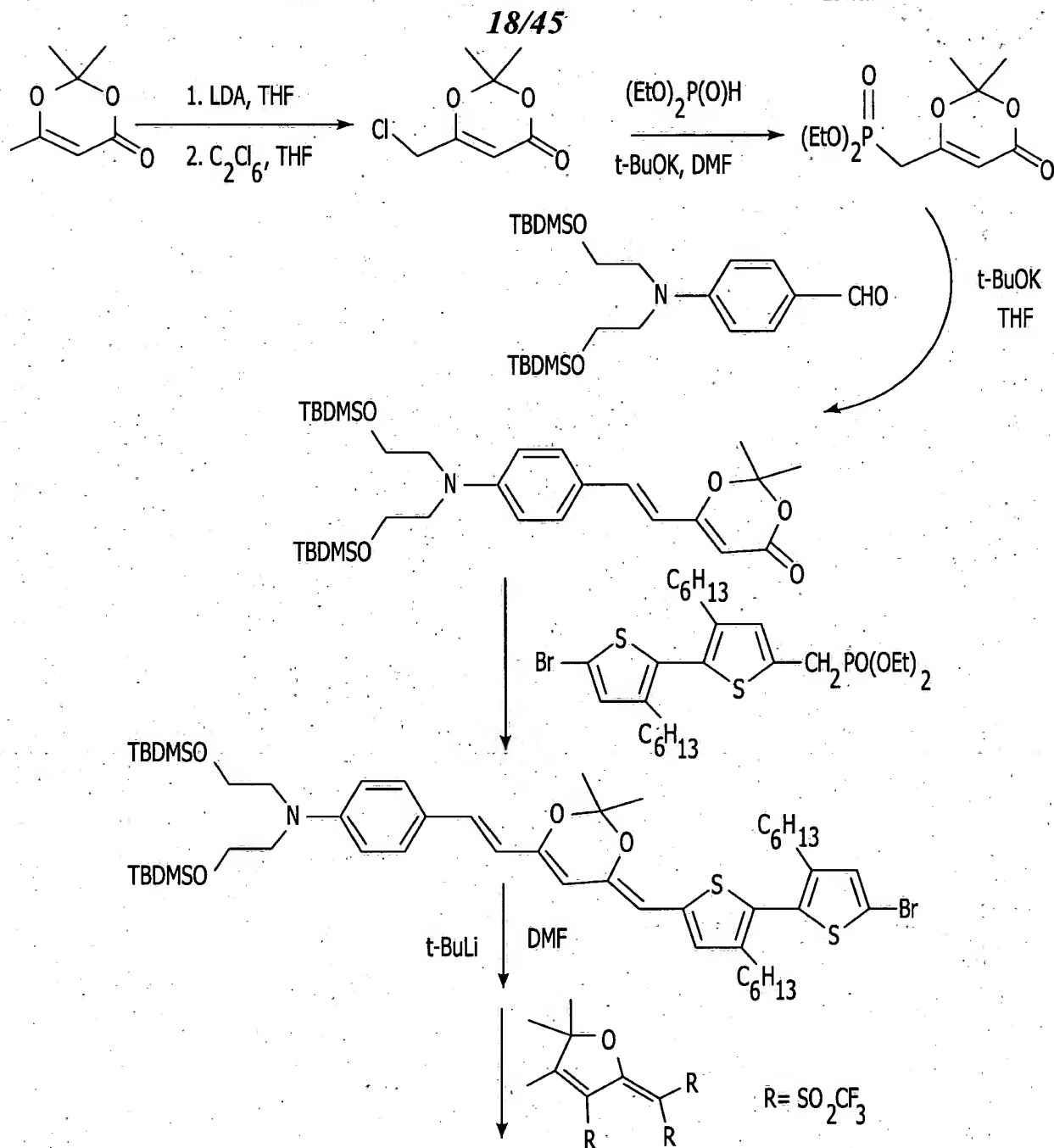


Fig.17.

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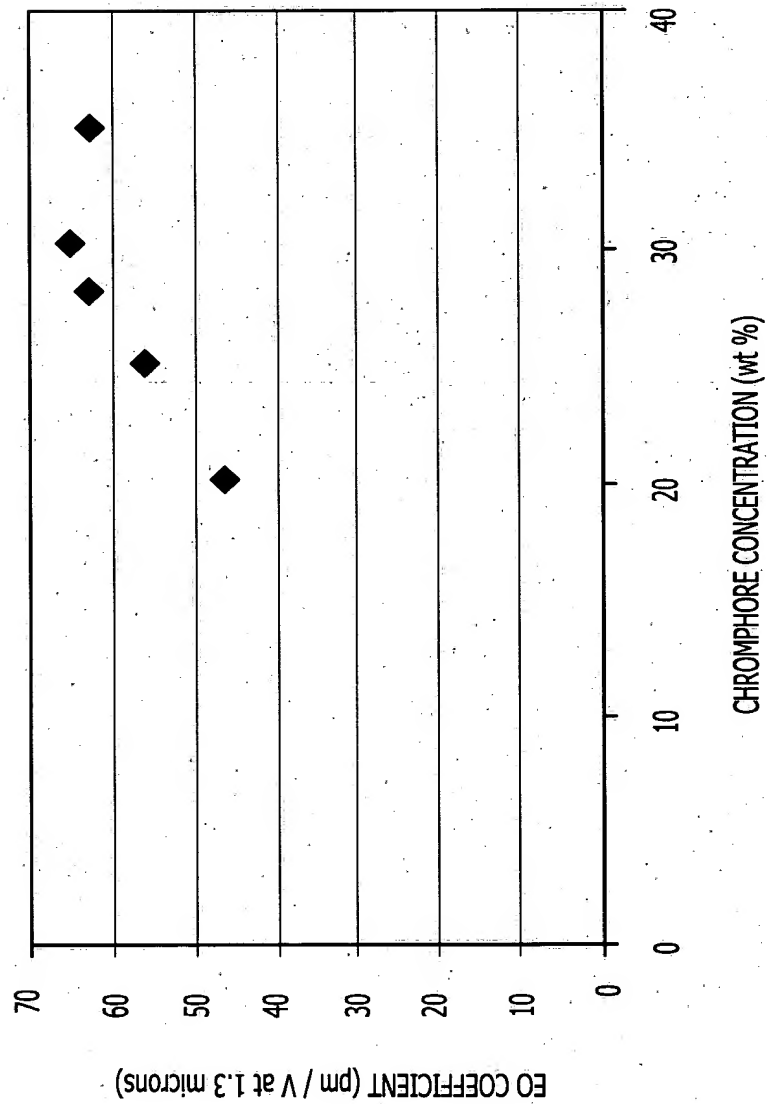


Fig. 18.

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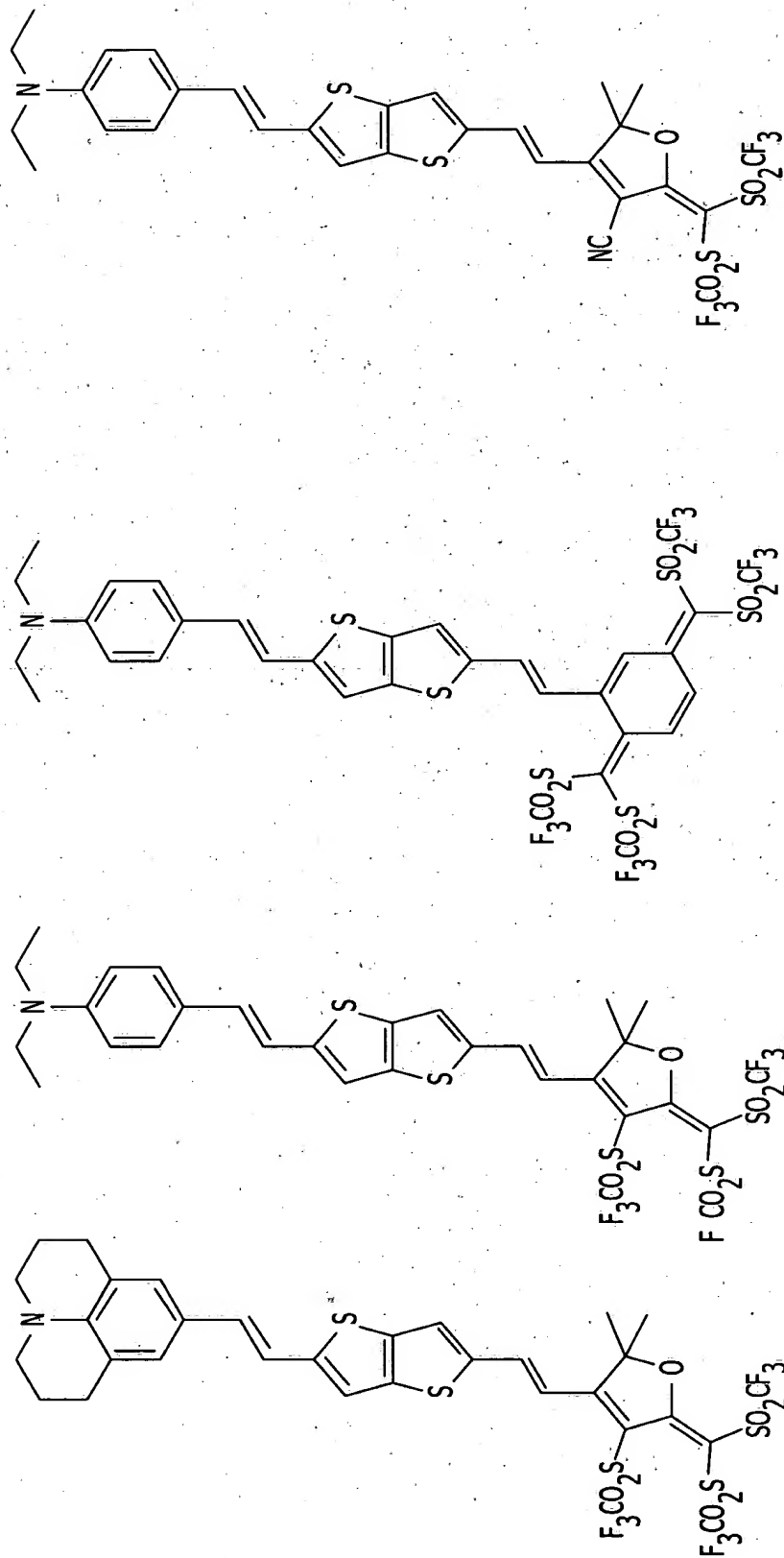


Fig. 21.

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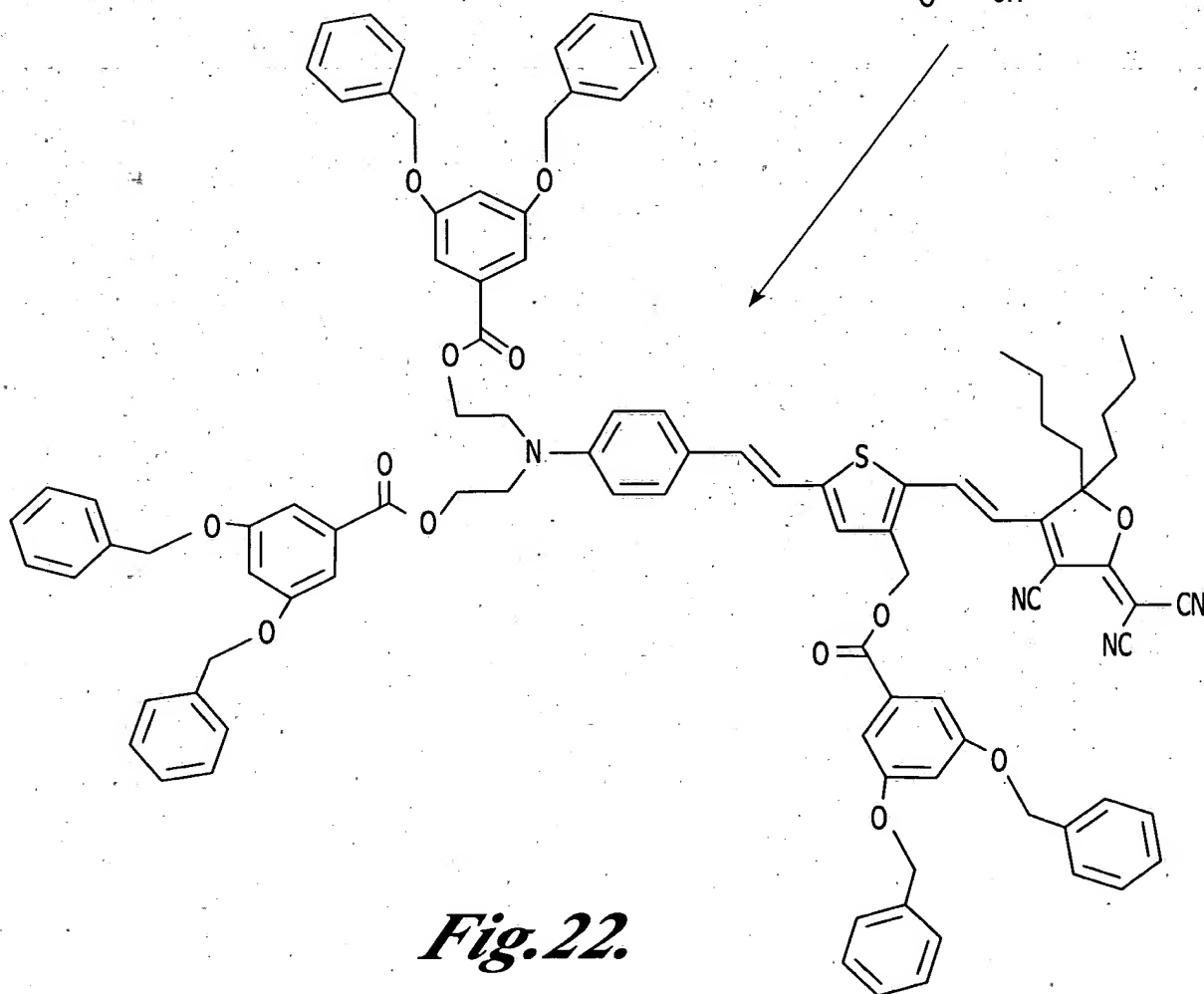
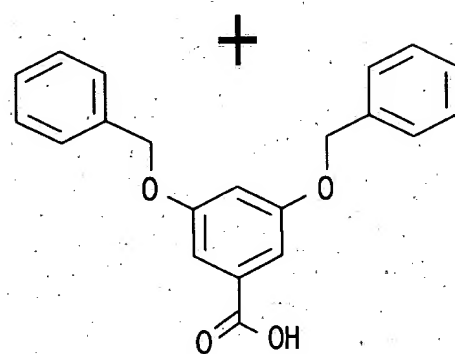
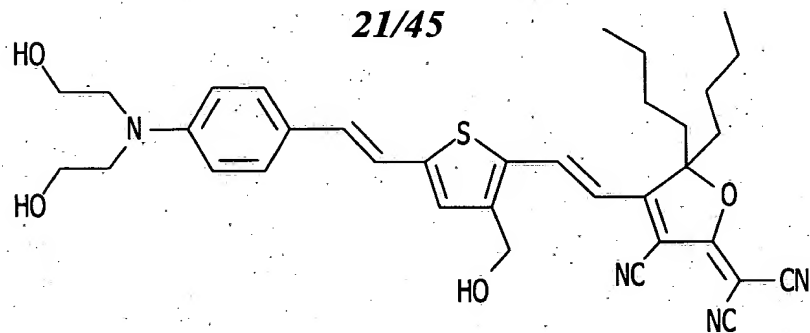


Fig.22.

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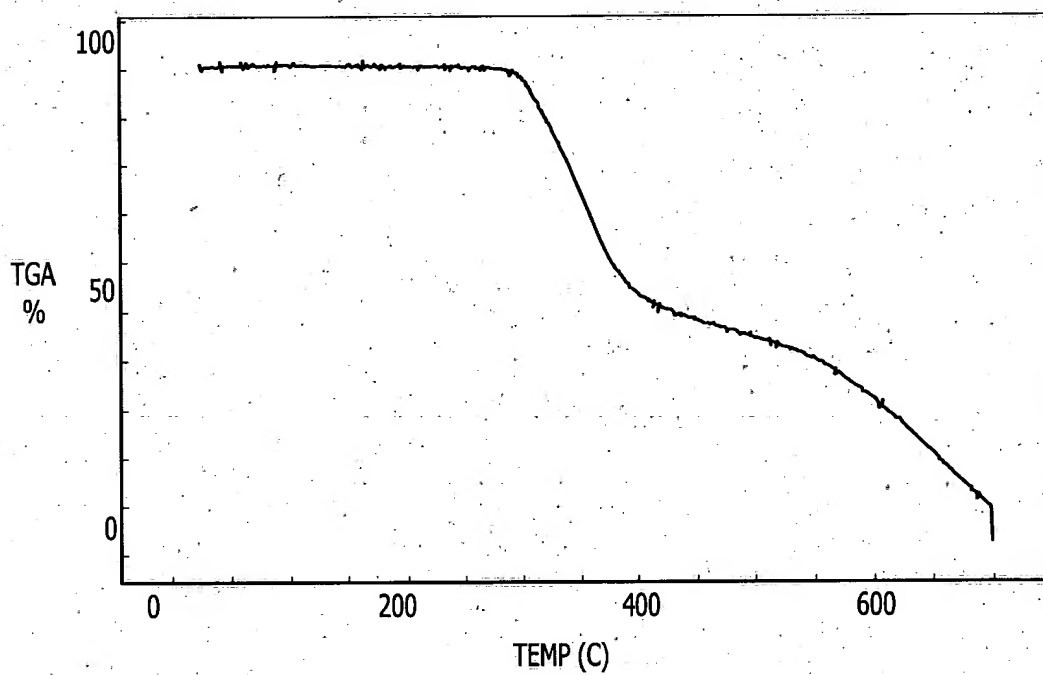


Fig.23.

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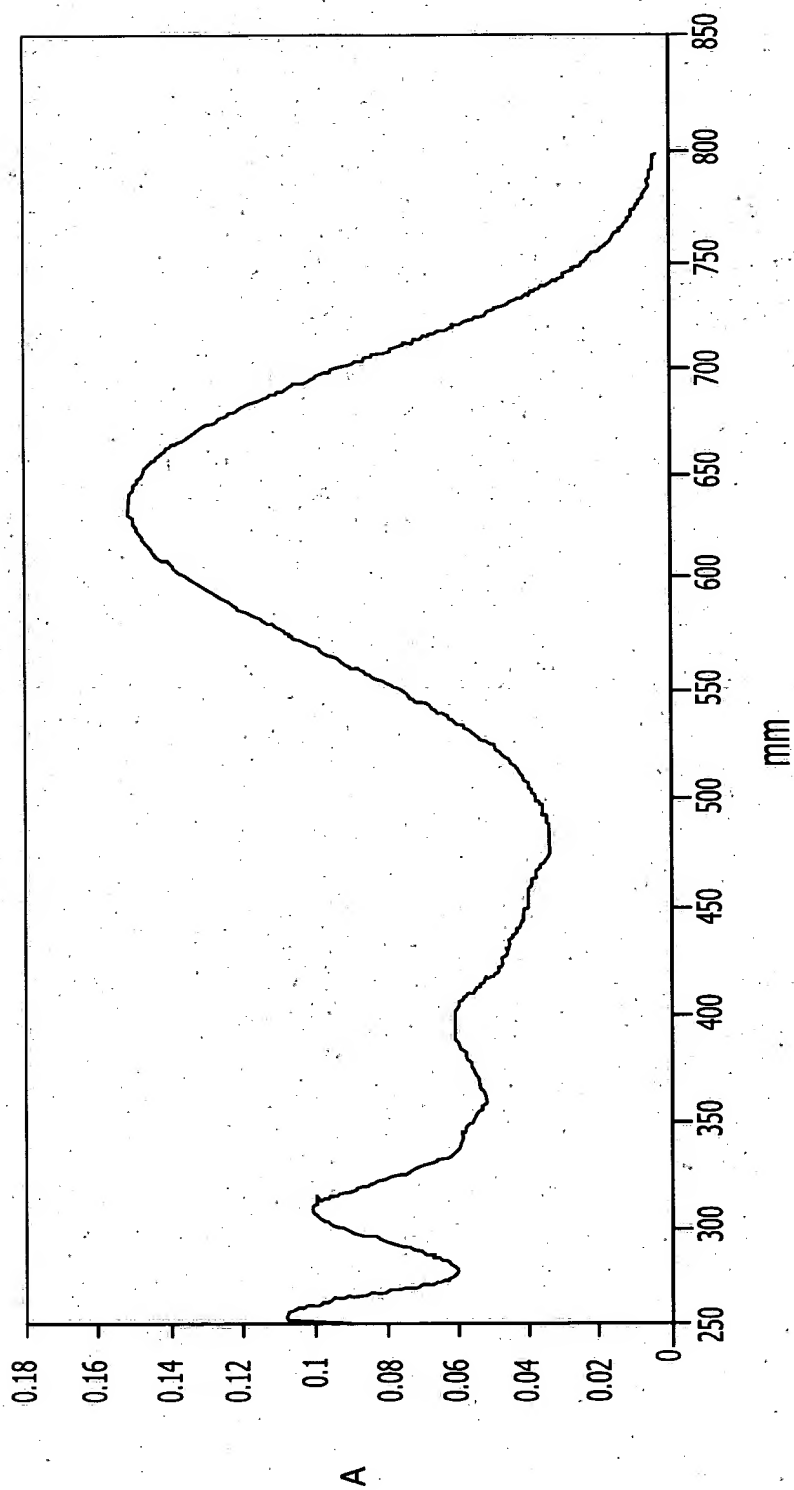


Fig. 24.

Title: HYPERPOLARIZABLE ORGANIC CHROMOPHORES

Authors: L.R. Dalton et al.

Application No.: 09/912,444

Docket No.: UOFW117403

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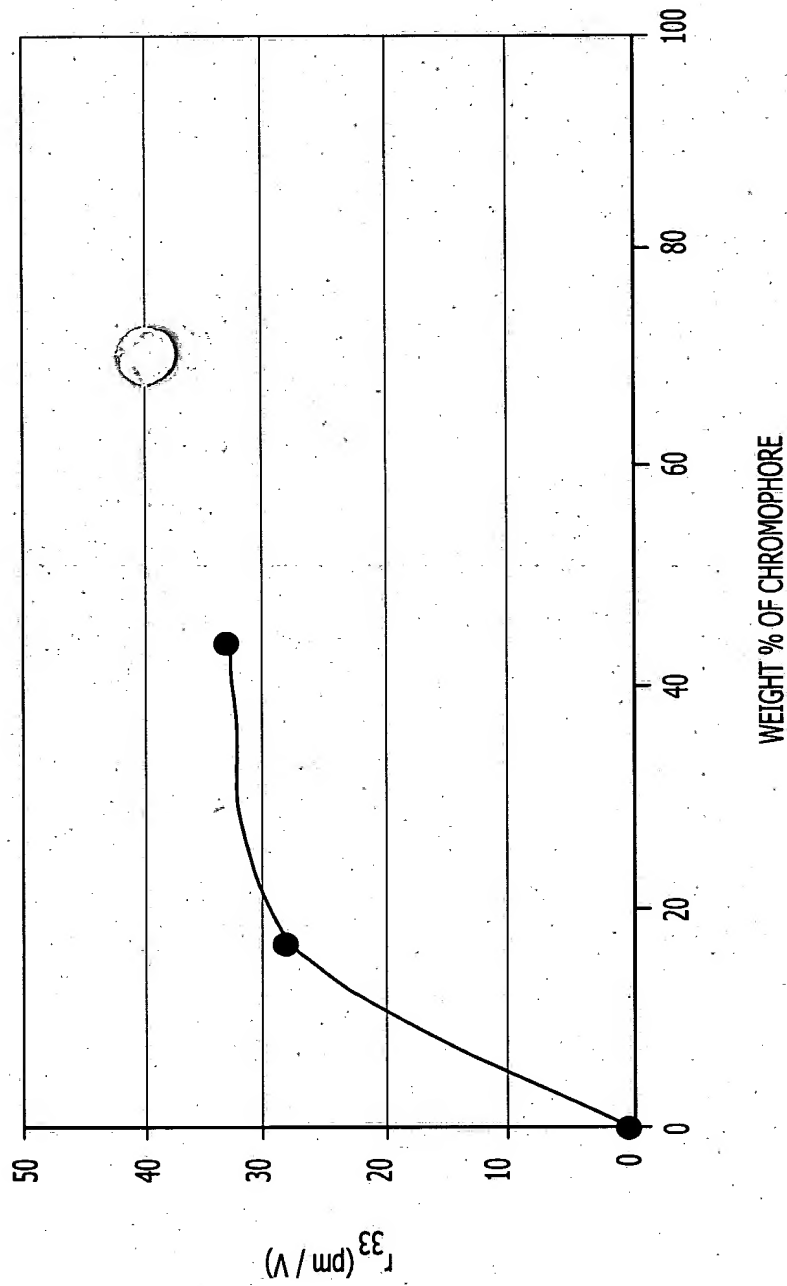


Fig. 25.

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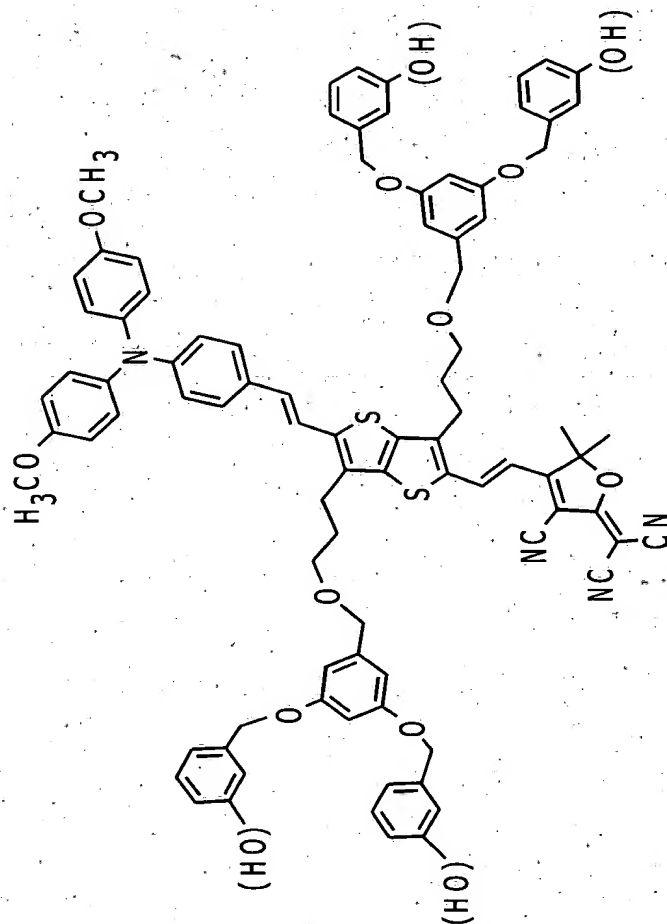
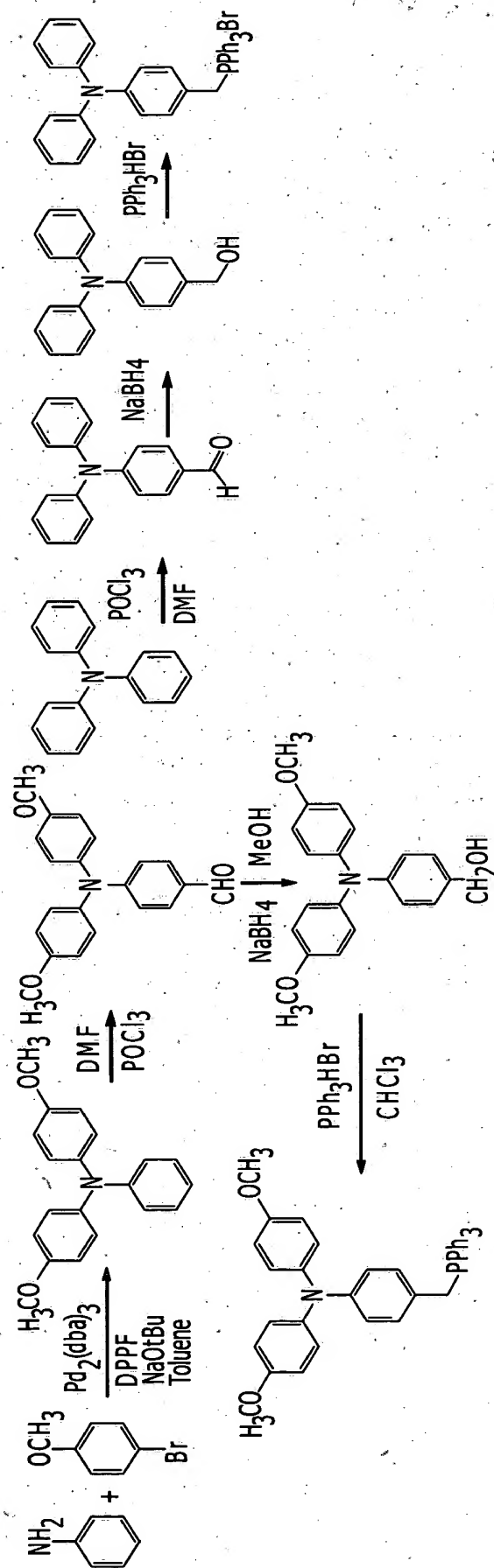


Fig. 26.

Fig. 27.



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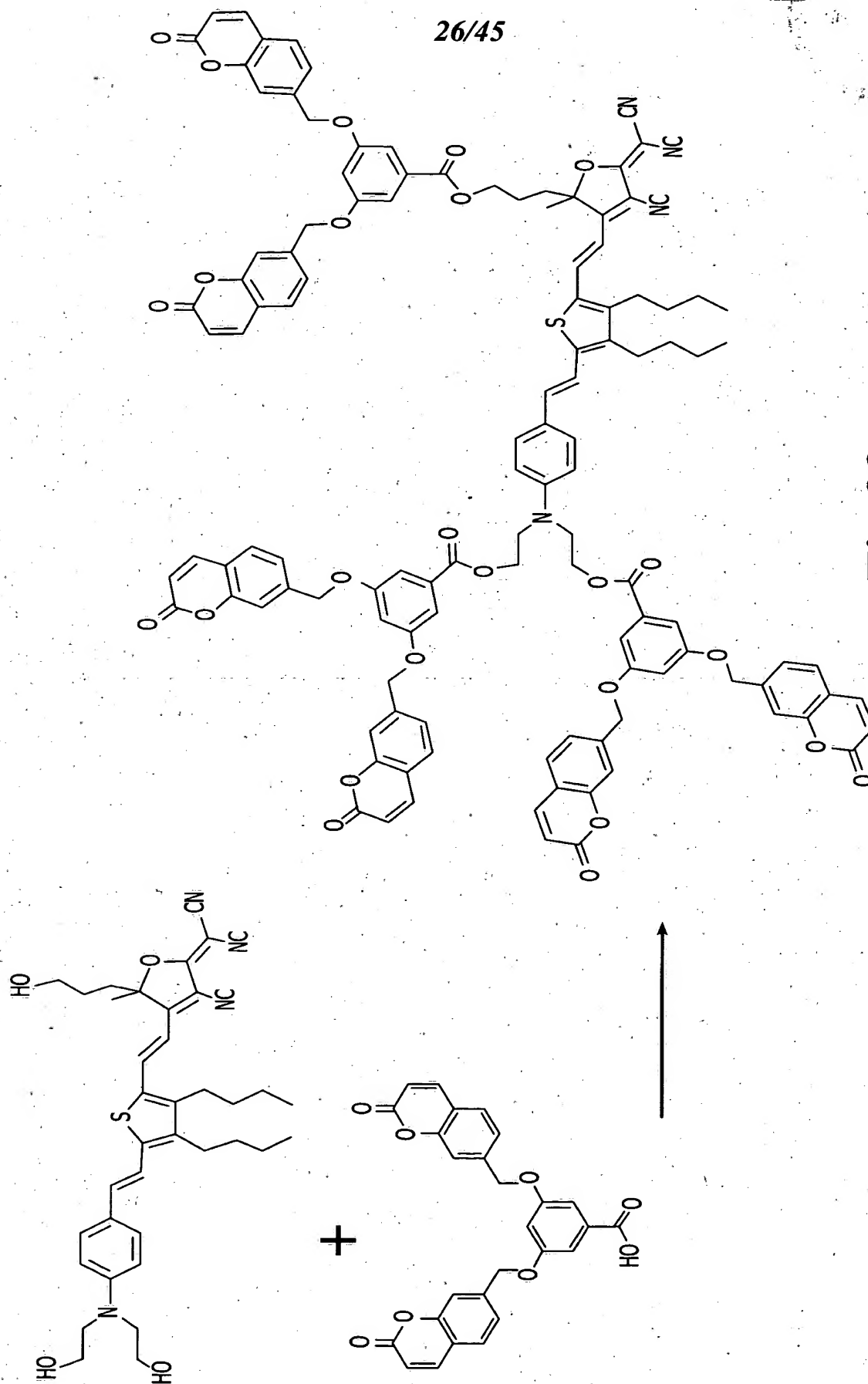
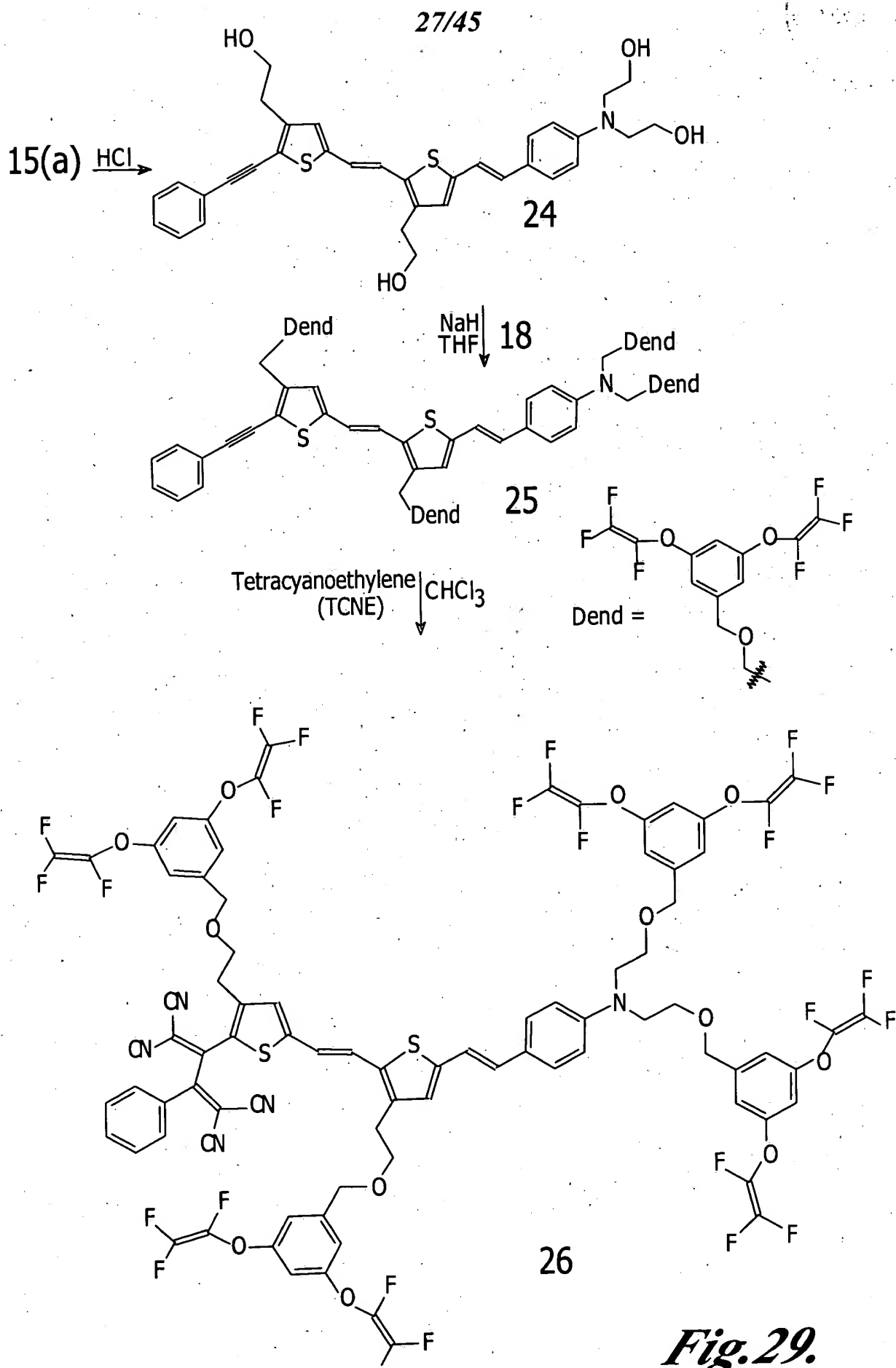


Fig. 28.



15(b) $\xrightarrow{\text{HCl}}$ $\xrightarrow[\text{THF}]{\text{NaH}}$ $\xrightarrow[\text{CHCl}_3]{\text{TCNE}}$ **18**

The reaction scheme shows the conversion of compound **15(b)** to compound **18**. The first step uses HCl. The second step uses NaH in THF. The third step uses TCNE in CHCl₃.

18 is a complex molecule featuring two thienothiopyran units linked by a central thiophene ring. Each thienothiopyran unit has a cyano group (CN) and a phenyl ring. The thiophene ring is substituted with a 4-(diethylamino)-2-methoxyphenyl group and a 4-(difluoromethoxy)phenyl group.

Fig. 30.

Fig. 30.

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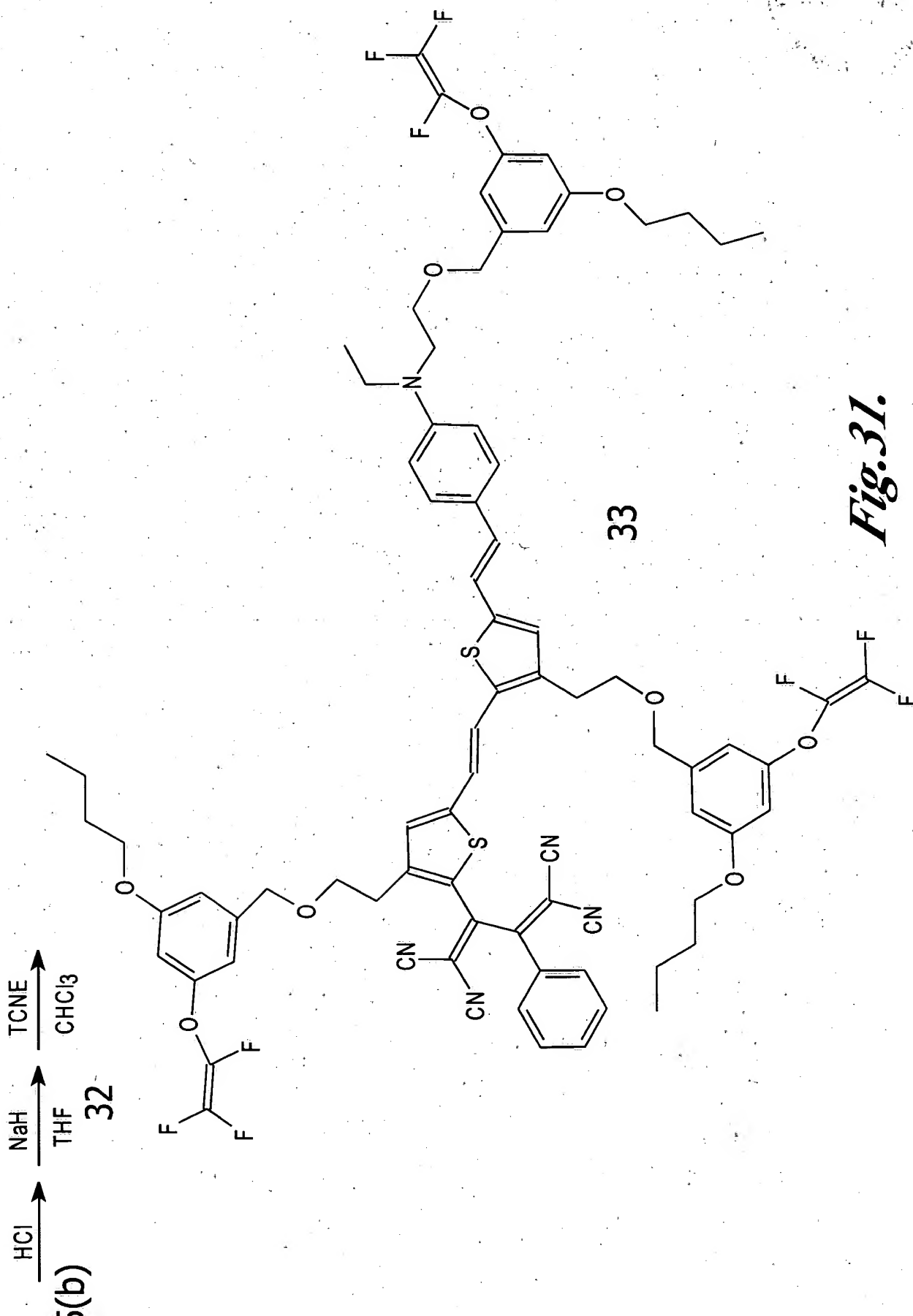


Fig.31.

00000000000000000000000000000000



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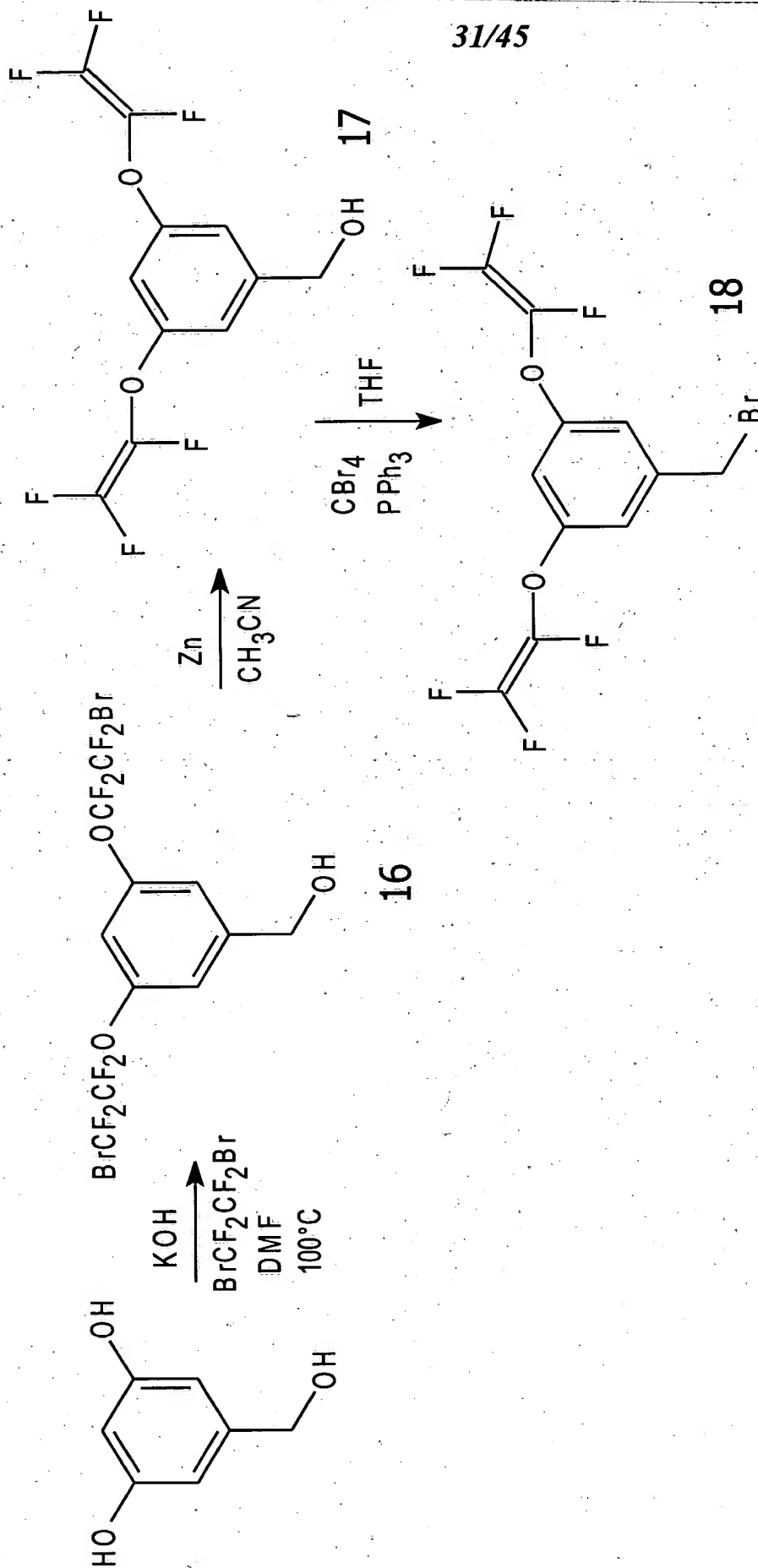


Fig.33.

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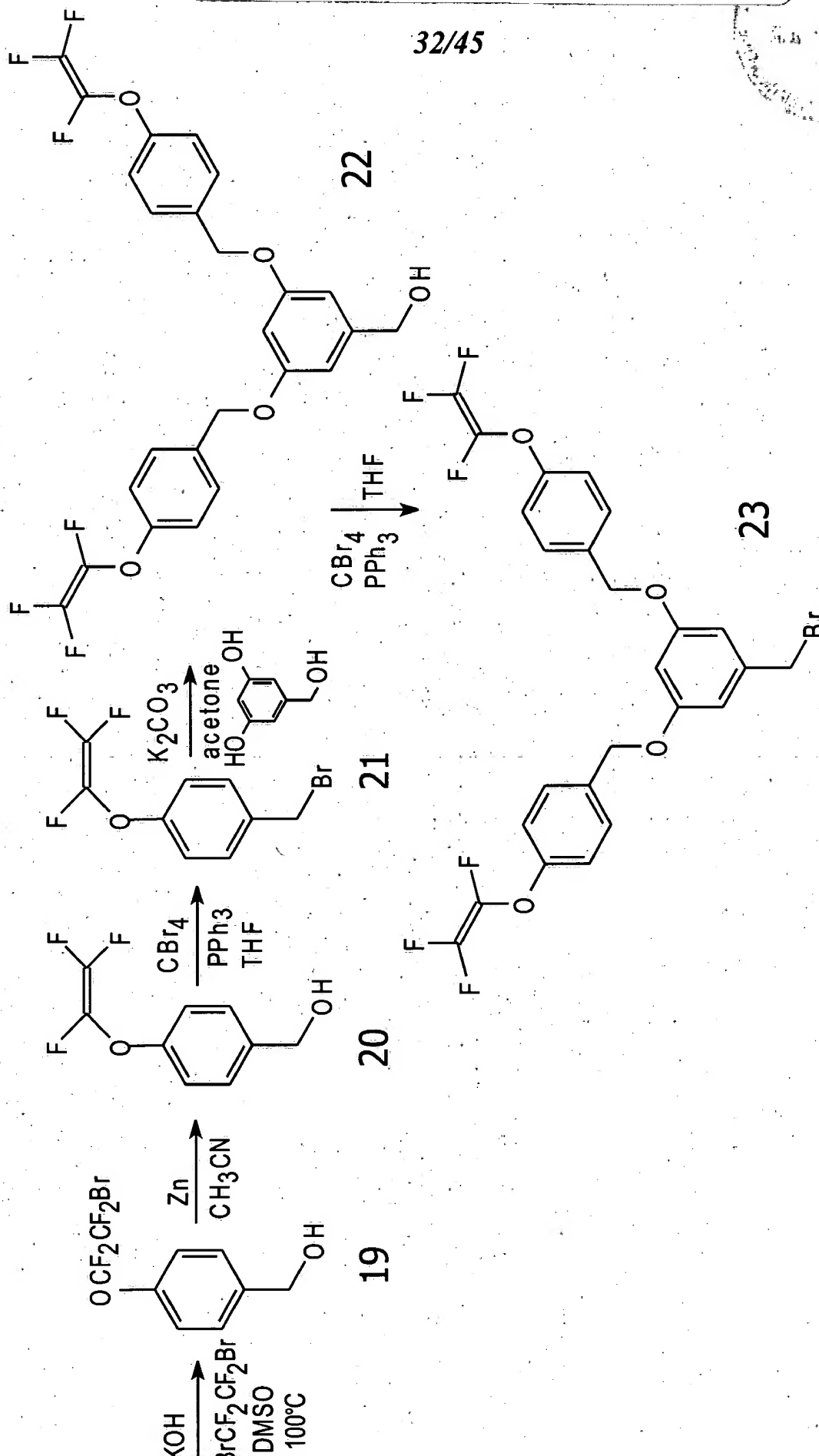


Fig. 34.

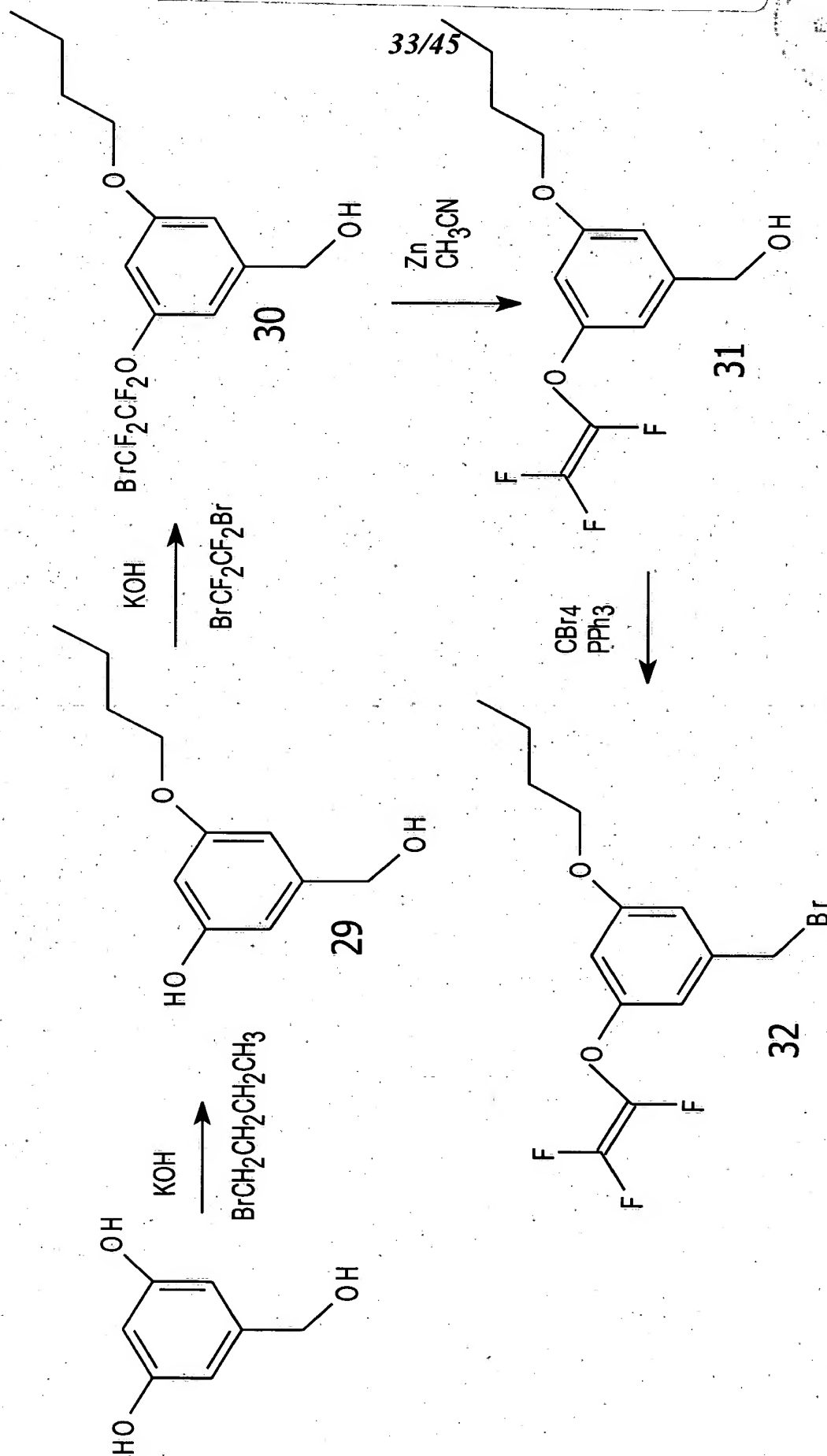


Fig.35.

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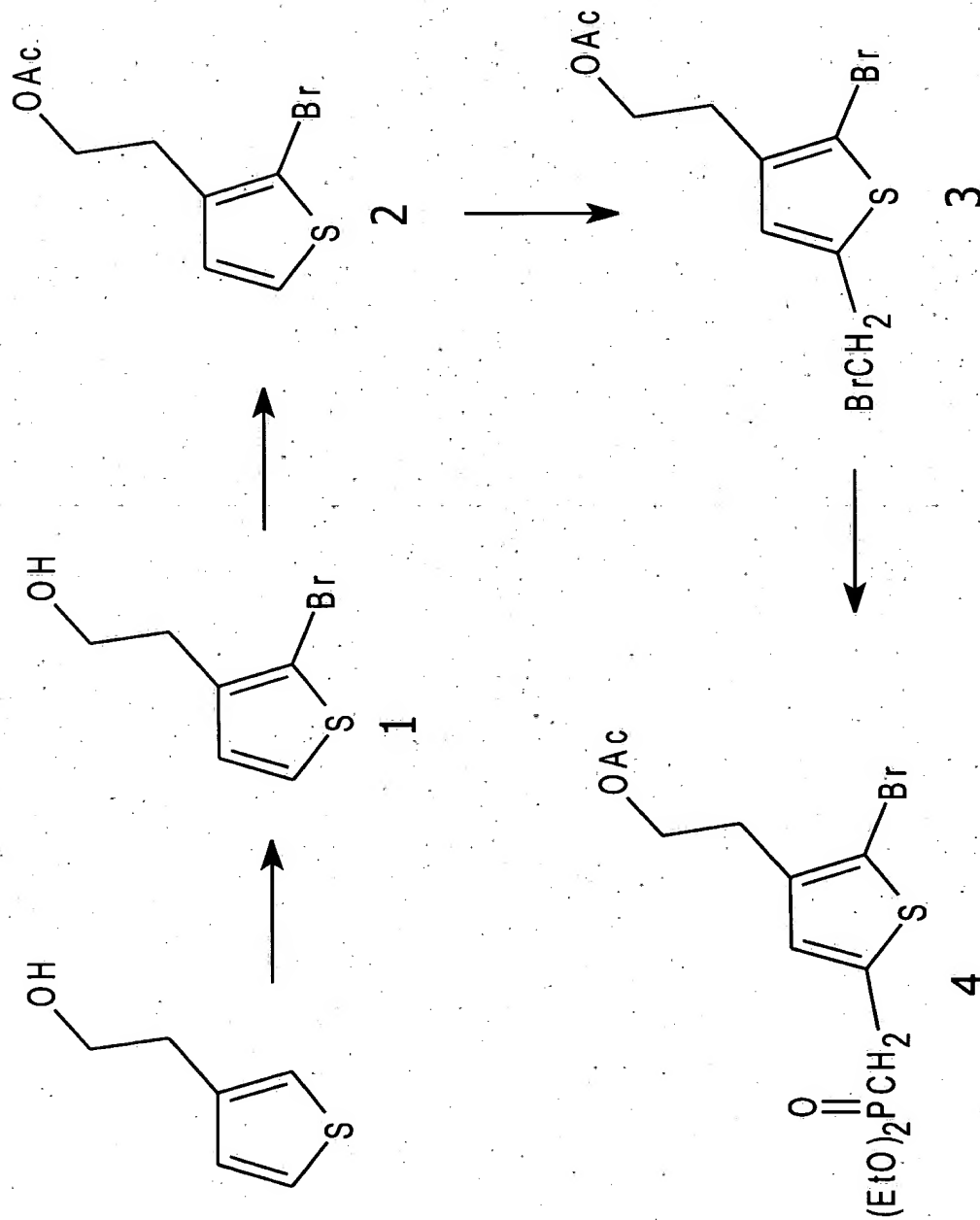


Fig. 38.

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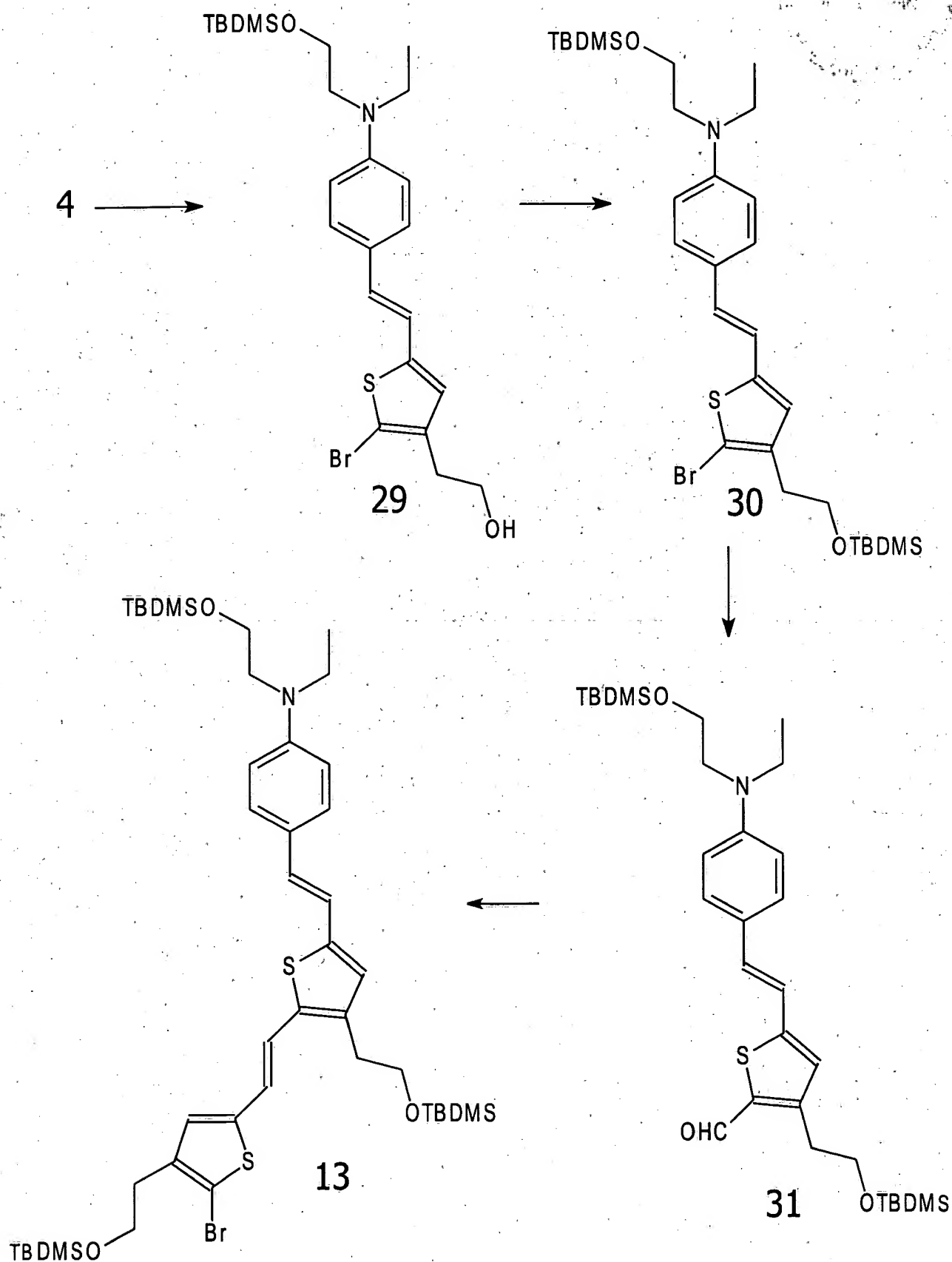
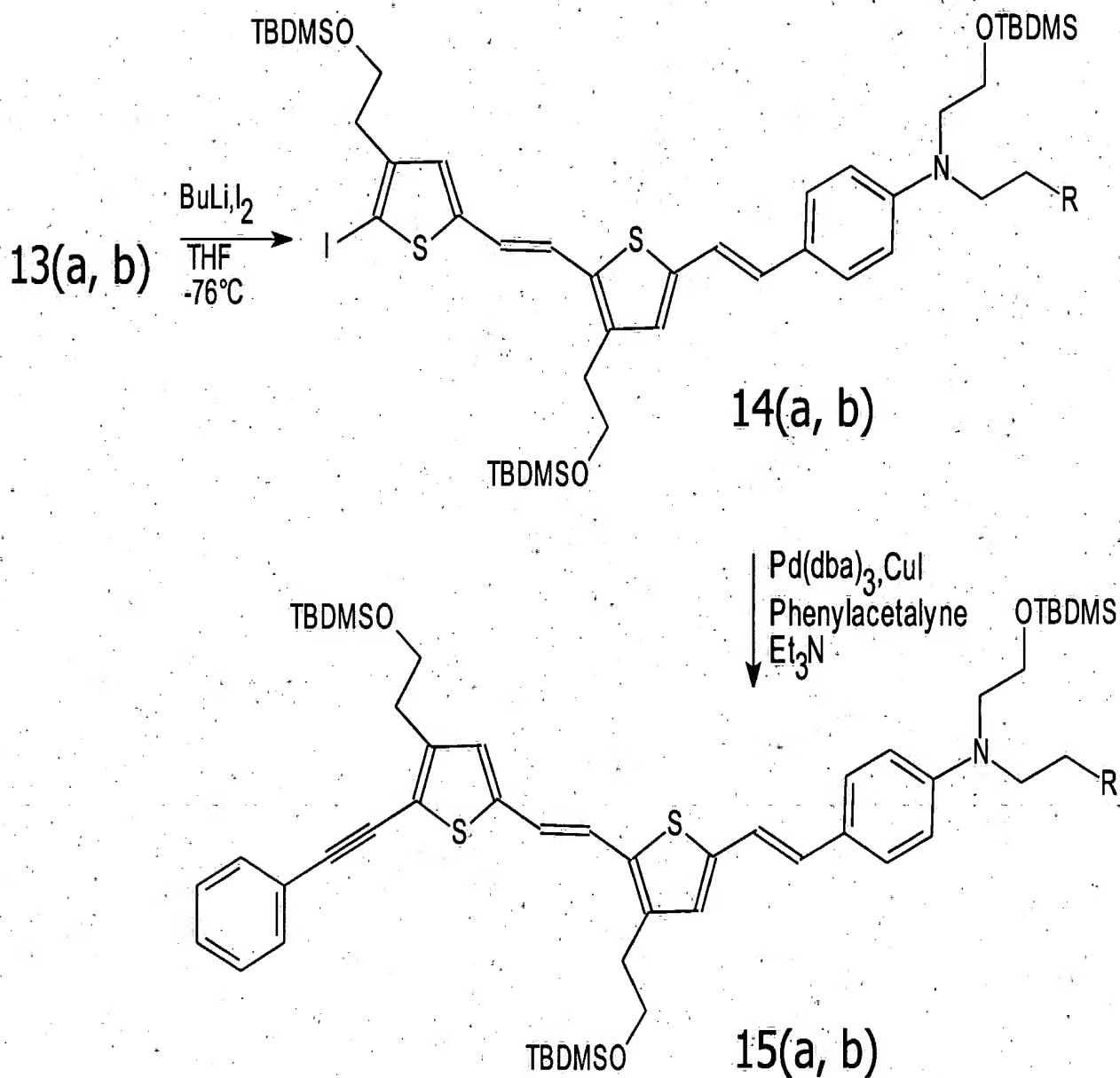


Fig.39.

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a R = OTBDMS
b R = H

Fig. 40

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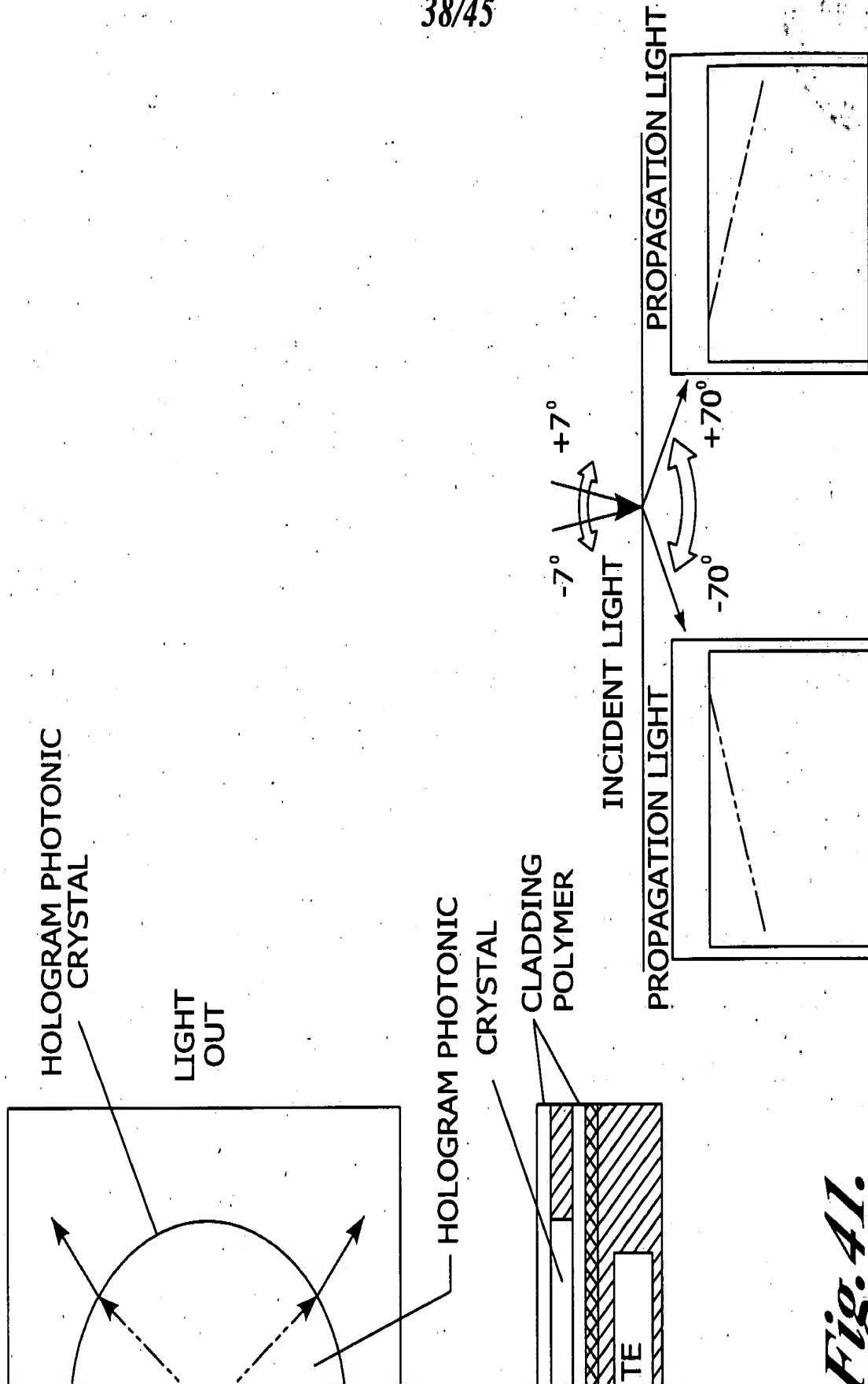
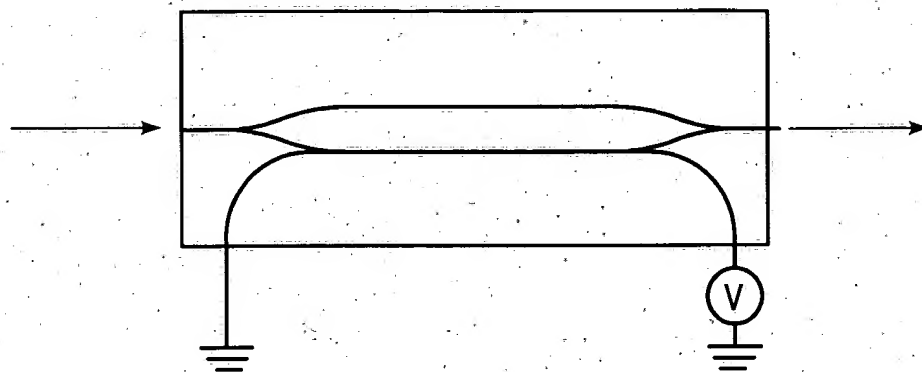
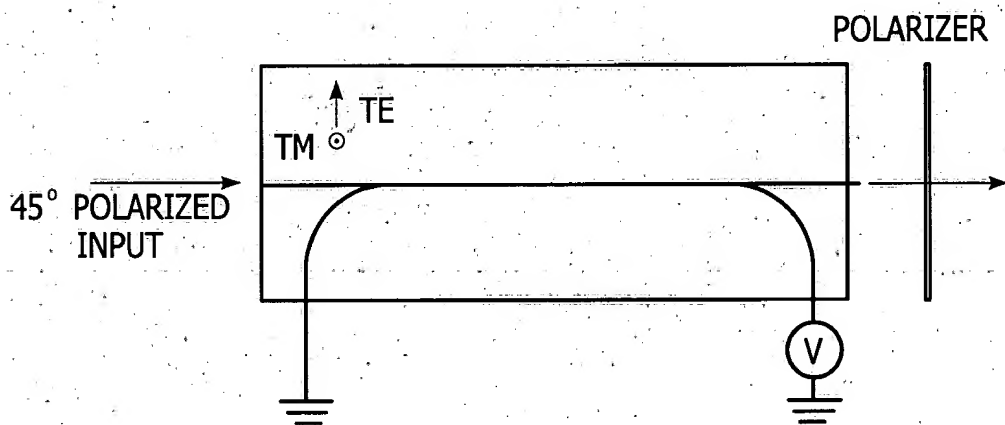


Fig. 41.

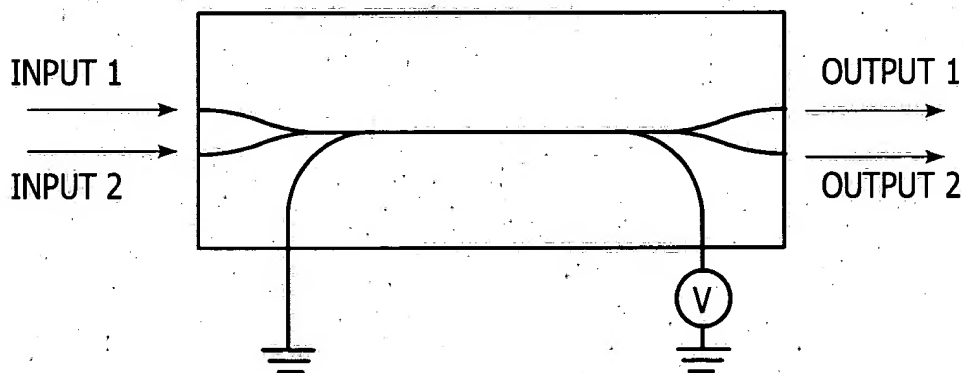
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MACH ZEHNDER MODULATOR



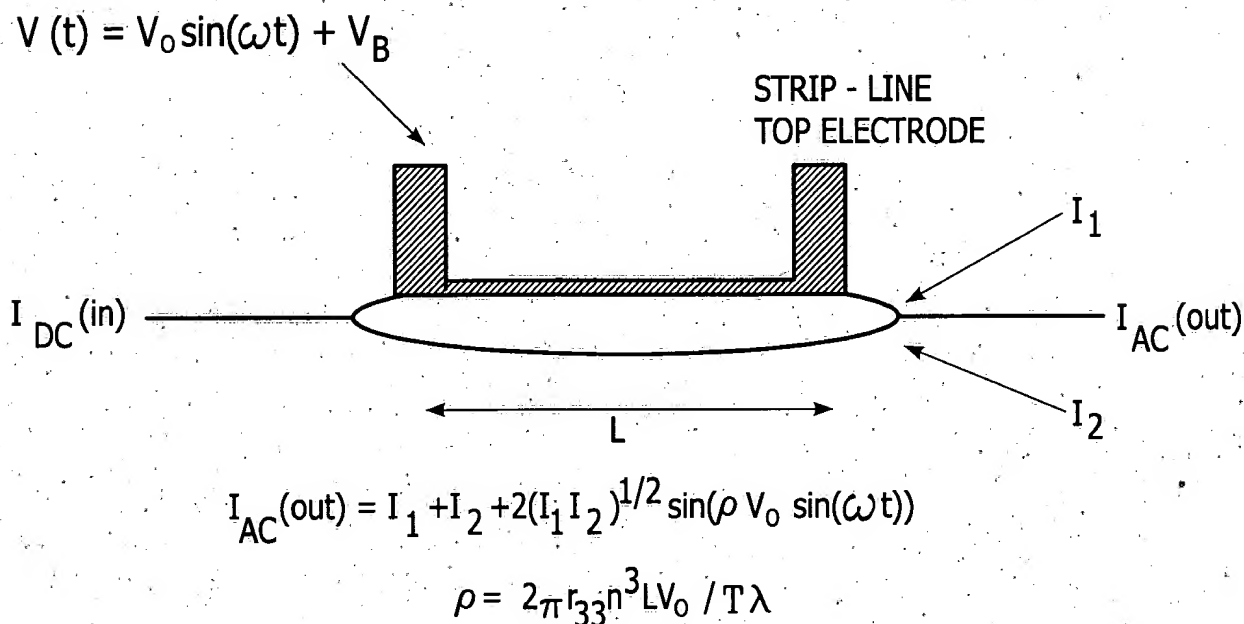
BIREFRINGENT MODULATOR



DIRECTIONAL COUPLER

Fig. 42.

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COMPARISON OF KEY FEATURES OF SIMPLE DEVICES

	MACH ZEHNDER INTERFEROMETER	BIREFRINGENT MODULATOR	DIRECTIONAL COUPLER
r_{eff}	r_{33}	$r_{33} r_{13}$	r_{33}
V_π	$V_{\pi MZ}$	$1.5 V_{\pi MZ}$	$1.73 V_{\pi MZ}$
Mod. Power	P_{MZ}	$2.75 P_{MZ}$	$3 P_{MZ}$

Fig.43.

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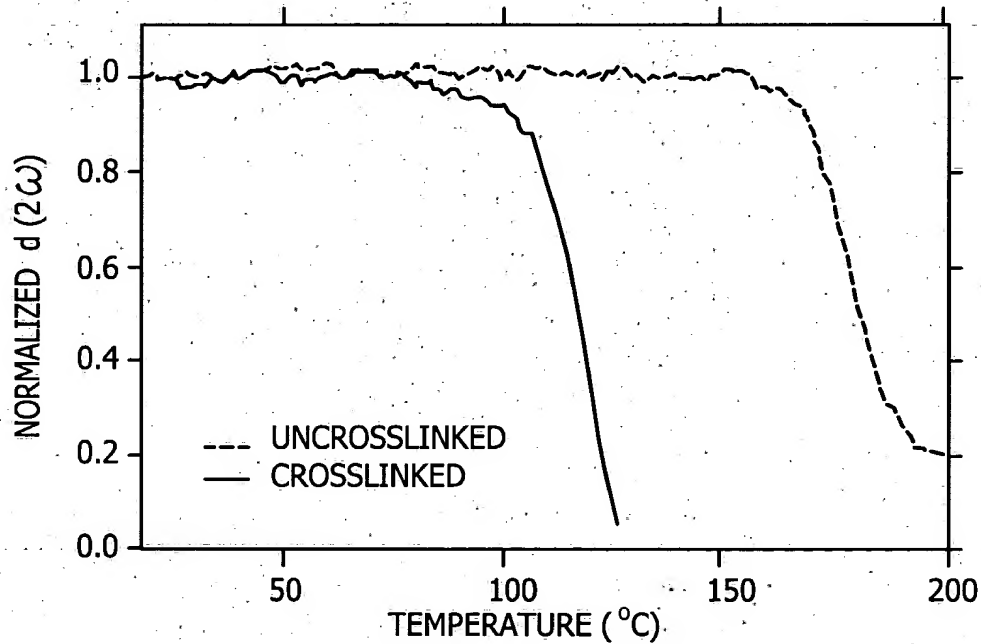
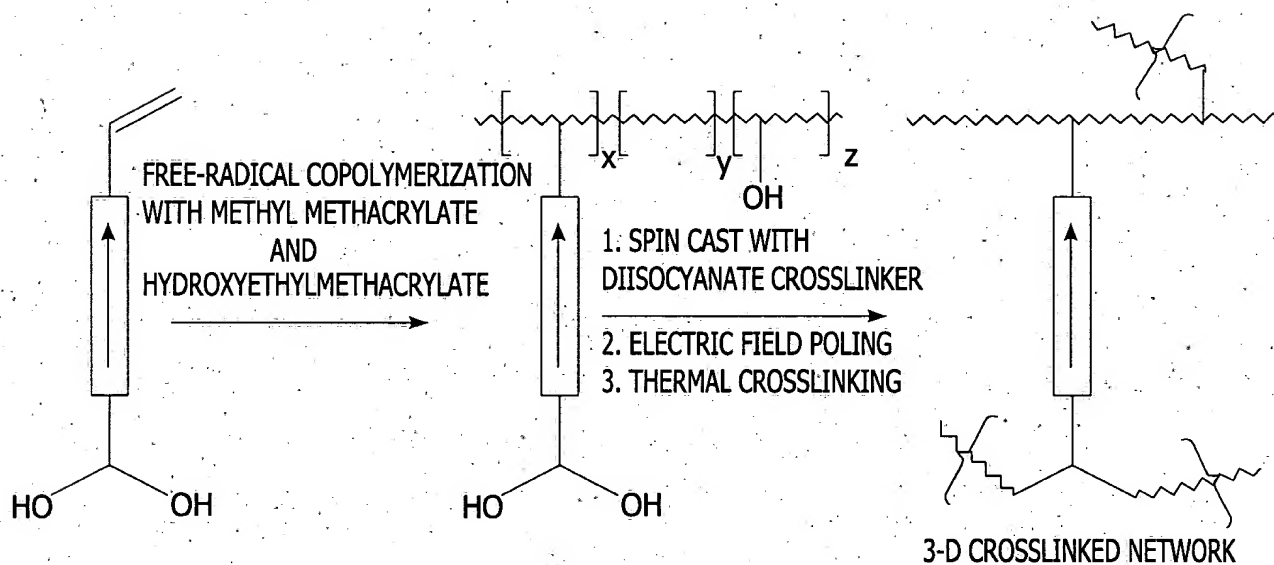


Fig. 44.

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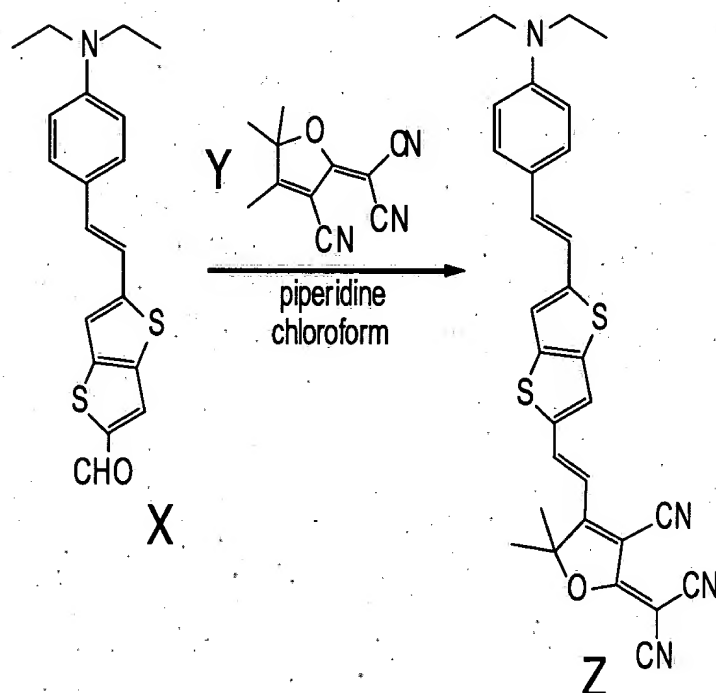
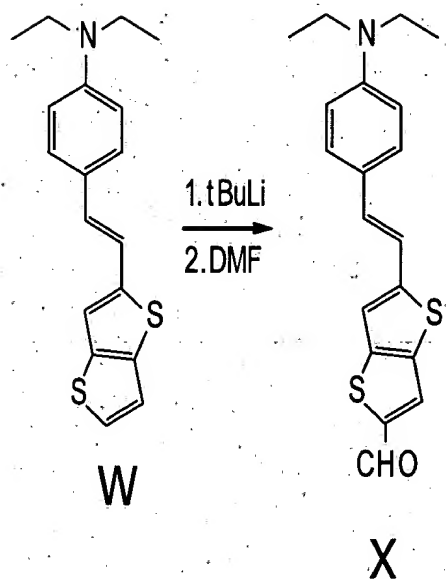
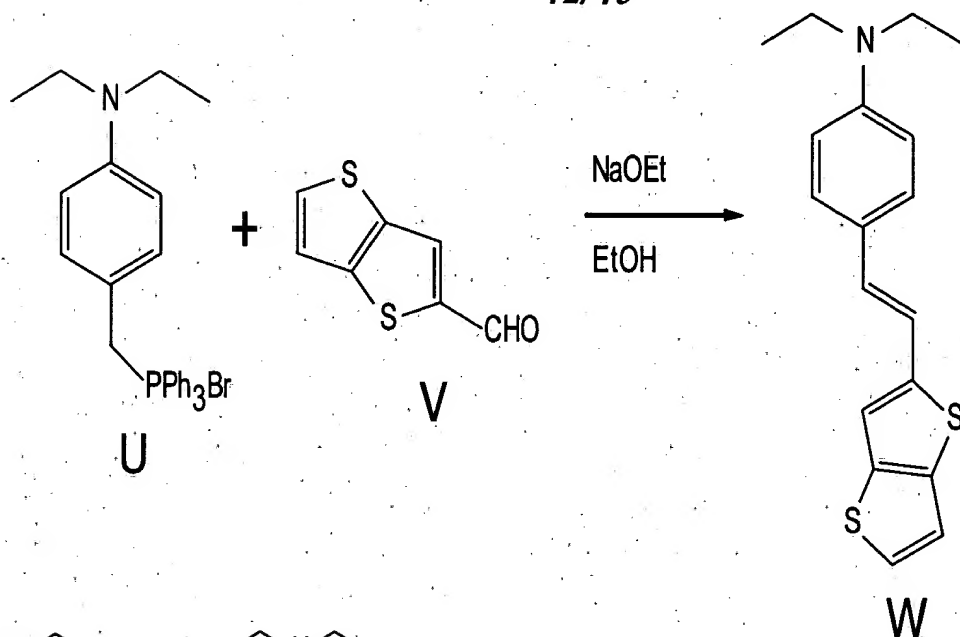


Fig. 45.

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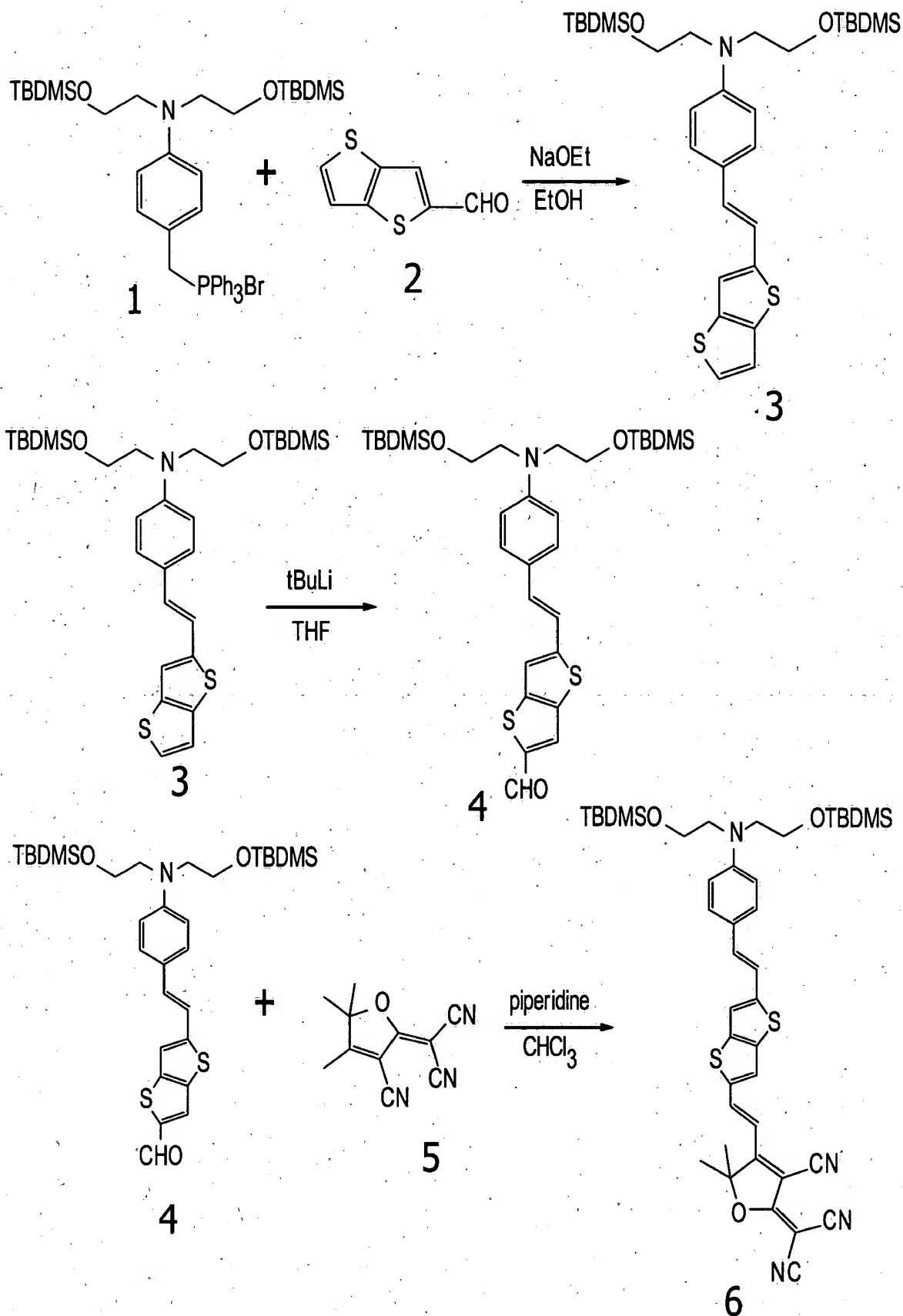


Fig. 46.

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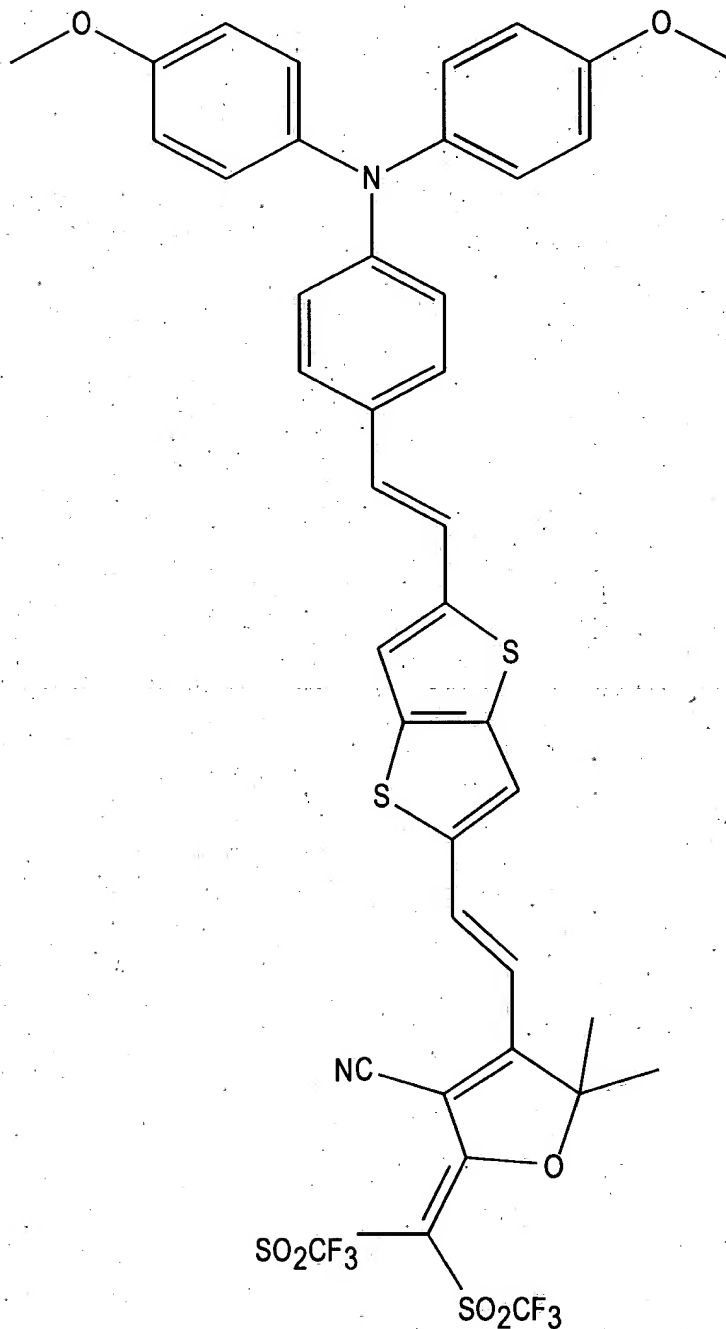
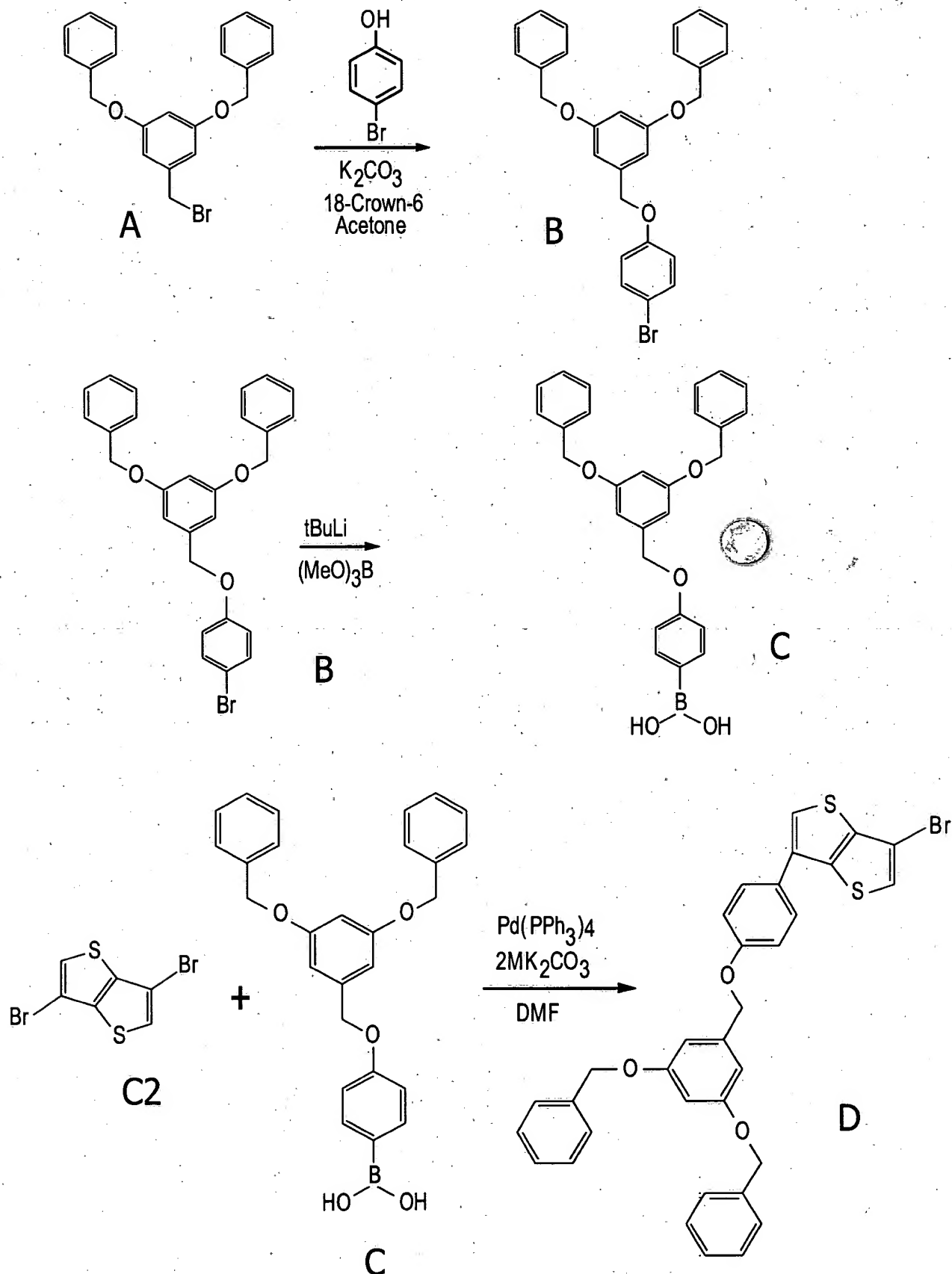


Fig.47.

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**Fig. 48.**